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CONSULTING UROLOGIST TO KING'S COLLEGE HOSPITAL; SURGEON TO ST. PETER'S HOSPITAL.

LECTURE I.

(Delivered on Feb. 17th.)

THE beginning of prostatic surgery, as we know and practise it to-day, is found in the work of McGill, of Leeds, and Belfield, of Chicago. At the time when McGill first advocated the suprapubic operation, it was generally accepted that a considerable proportion—estimated at about 30 per cent.—of all men over 55 had prostatic glands of an abnormally large size, but only about 50 per cent. of these had any symptoms that required attention. So long as there was no distressing frequency of micturition, due to infection of the bladder, or partial or total retention of urine, the enlargement of the organ might be disregarded; but infection and retention demanded surgical aid and this was afforded in the occasional or the habitual passage of the catheter. "The orthodox treatment of enlarged prostate," wrote McGill,[1] "may be discussed in a few words. Teach the patient how to pass a soft catheter for himself and let him pass it once or twice a day. When the treatment is successful nothing more is required." The introduction by Mercier of the coudé or curved gum-elastic catheter was hailed by Teevan in the Lettsomian lectures of 1880 as a great step in the treatment of these cases. Previously English gum-elastic catheters, suitably bent, were carried in a mahogany case. "Now," said Teevan,[2] "all this cumbersome apparatus is done away with and patients carry in their walking-sticks or umbrella-sticks but one catheter."

Catheter treatment was not always successful. In certain cases the difficulty of a much-distorted prostatic urethra or the inability of the patient to learn prevented the adoption of this method. In other cases the method broke down after a time owing to the increased difficulty in catheterism or the greater frequency with which the catheter had to be passed from infection of the urine. In acute retention of urine the failure to pass the catheter was dealt with in several ways. A metal catheter might be forced through the obstruction, tearing through the prostate and forming a new channel. This was termed "tunnelling the prostate" and was not regarded with favour by the more orthodox surgeons. Tapping the bladder with a metal trocar and cannula above the pubes, in the perineum or through the rectum, were the common methods, although the latter route was not recommended by the best authorities. In the chronic cases, where the intermittent passage of the catheter had failed, several methods were open for trial. A catheter retained in the urethra for a week or more was highly spoken of by Reginald Harrison.[3] In early cases dilatation of the prostatic urethra by special dilators was advocated by some surgeons. Two methods of incising the obstructing part of the neck of the bladder by way of the urethra were open for trial. Mercier[4] 32 years before and Guthrie at an earlier date had practised section by means of a prostatectome or concealed knife passed through the urethra into the bladder, while Bottini[5] had revived and improved the method introduced by Amussat, in which an obstructing bar was divided by means of an electric cautery passed through the urethra. These two methods of incising or cutting a wedge from the obstructing prostate at the neck of the bladder have, through many vicissitudes, survived to the present day, and are practised by a few surgeons in selected cases. The punch operation of Young[6] and "forage de la prostate" as practised by Luys[7] with the high-frequency cautery are the same operations that were practised with less perfect instruments in the day of McGill. Perineal cystotomy as a temporary measure was advocated by some surgeons. To this was added dilatation of the prostatic urethra and section of the obstructing portion at the neck of the bladder with the object of obtaining a more permanent result. Gouley,[8] of New York, claimed priority in this operation. Harrison[3] advocated it but followed it with drainage by the perineum through a stout tube for 6 to 12 weeks. Sir Henry Thompson had used suprapubic puncture as a temporary measure in cases of failure of catheter life in enlarged prostate.

There had been removals of the prostate by the suprapubic route before the time of McGill and Belfield. The French surgeon Amussat[9] had removed the enlarged middle lobe with scissors by this route in 1836; Billroth[10] and Dittel[11] in 1885, and Benno Schmidt[12] and Trendelenburg[13] in 1886, had performed similar operations. But these were isolated cases, and at the period we are now considering there was no body of opinion favourable to removal of the enlarged prostate, either by the perineal or by the suprapubic route. There was, moreover, a powerful influence which militated against any attempt to cure cases of enlarged prostate by radical operation. Two great figures in the surgical world—namely, Guyon of Paris and Sir Henry Thompson of London—were opposed to all radical operation on the enlarged prostate. The view that these eminent authorities held was that, in cases of enlargement of the prostate gland when catheter life had been fully tried and had failed, the bladder was atonic from prolonged obstruction and disuse, and would not regain its expelling power even if the obstruction were removed. These views were decisive in restraining surgeons from attempting the radical cure by operation of retention due to enlargement of the prostate.

MCGILL'S OPERATION.

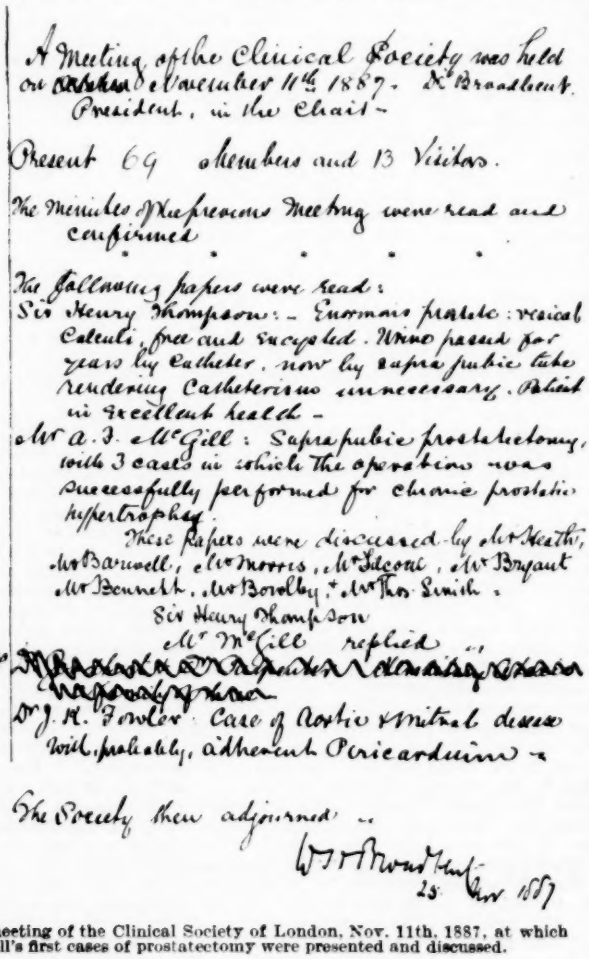
On Nov. 11th, 1887, an ordinary meeting of the Clinical Society of London[14] was held, with Dr. W. H. Broadbent, the President, in the chair (see illustration). The prospect of a discussion on the treatment of enlargement of the prostate had drawn together 69 members and 13 visitors, and the unusual number of visitors showed that interest in the proceedings had spread beyond the members of the society. Sir Henry Thompson, the most eminent authority in the country on the surgery of the urinary organs, led off with "a case of enormous prostate, vesical calculi free and encysted; urine passed for years by catheter, but now by suprapubic tube without any catheter for a year and a half; patient in excellent health." He recommended a free suprapubic section in order to clear out phosphatic and other debris from the bladder and provide a permanent suprapubic drainage. He proposed this as a method of treatment for advanced cases of enlarged prostate.

"Then Mr. McGill read a paper on suprapubic prostatectomy, and related three cases where the operation had been successfully performed for chronic prostatic hypertrophy." The operation "consists in opening the bladder and removing that portion of a hypertrophied prostate which prevents the passage of the urine from the bladder into the urethral canal." The growth was removed partly by tearing with forceps and partly by cutting with scissors or with a strong cutting instrument which he had devised for the purpose. He only performed the operation in cases of great urgency where catheter life had broken down. "The operation aimed not only at removing acute symptoms but at affording

permanent relief." Here then was a new idea. The removal of a portion of the prostate was to relieve the obstruction; the bladder muscle would regain its functional activity, and the organ would empty itself naturally. This was to be no palliation or temporary relief such as was the best that other methods could offer, but permanent cure was aimed at. This was indeed flying in the face of authority!

Sir Henry Thompson was present, and a few minutes before had described the method of permanent suprapubic drainage which he had introduced as a new and improved method of treatment. His views on the uselessness of removing the obstruction were well known. It is interesting to see how he took it. I can imagine there was a tense moment when he rose at the end of the debate. He was "much interested in Mr. McGill's operation and gratified by its results." The procedure was a "fresh starting point" and he "should further enquire into it." But there was the spectre of the atonic bladder and he reiterated his well-known views on this subject. Possibly in earlier cases there was an opening for the procedure, but he said this "without endorsing the operation." McGill in reply spoke of the difficulty in removing more than "minute fragments" of the prostate. He agreed in part with Sir Henry Thompson about atony. "Doubtless Sir Henry Thompson was right in placing a limit of time after which the operation would prove useless as a result of the atony of the bladder contingent on the long-standing prostatic disease."

This was in November, 1887. In September, 1886, about a year previously, Dr. W. T. Belfield,[15] of Chicago, had published a short note on a case in which he performed suprapubic cystotomy for two large calculi in a case of enlarged prostate. He mentions rather casually that: "The patient was so collapsed that no attempt was made to remove the prostatic outgrowth which could have been accomplished without much difficulty." The following year he was more successful. At the Chicago Medical Society on Feb. 7th, 1887, Belfield[16] showed a man, aged 73, who had been dependent on the catheter for a year. "Exploration of the bladder by a suprapubic incision revealed a solid prostatic outgrowth or middle lobe as large as a hazel nut. The pedicle was twisted off with forceps and the growth was removed. . . . The patient has since micturated freely without a catheter and can now almost completely empty his bladder." Another similar case followed in March, 1888. McGill[17 18] was unaware at the time he published his first case that Belfield had performed this operation. In all his subsequent articles he fully acknowledges the priority of Belfield's case. "Before I conclude, it is right that I should state that Dr. Belfield, of Chicago, is, so far as I know, the surgeon who first performed the operation which I have been describing." This case detracts in no way from the importance of McGill's work. The operation which Belfield so courageously undertook was a sporadic effort which does not appear to have attracted much attention, and which alone would have had little influence on the general trend of surgical thought on the subject. The work of McGill was an organised campaign against the prevailing views and in favour of a bolder and a progressive policy of cure of the retention of urine caused by enlargement of the prostate.



A Meeting of the Clinical Society was held on November 11th 1887. Dr Broadbent President, in the Chair.

Present 69 Members and 13 Visitors.

The Minutes of the previous Meeting were read and confirmed.

* * * * *

Papers. The following papers were read:

(1) Sir Henry Thompson:- Enormous prostate: vesical Calculi, free and encysted. Urine passed for years by Catheter, now by supra pubic tube rendering Catheterism unnecessary. Patient in excellent health.

(2) Mr A. J. McGill: Suprapubic prostatectomy, with 3 cases in which the operation was successfully performed for chronic prostatic hypertrophy.

These Papers were discussed by Mr Heath, Mr Barwell, Mr Morris, Mr Silcock, Mr Bryant Mr Bennett, Mr Bowlby, Mr Thos Smith.

Sir Henry Thompson

Mr McGill replied.

Living Specimens Mr Brodie & Dr Pye-Smith showed cases of Aortic Regurgitant Murmur.

Dr J. R. Fowler: Case of Aortic & Mitral disease with, probably, adherent Pericardium.

The Society then adjourned.

W T Belfield Hon Sec
25 Nov 1887

Minutes of meeting of the Clinical Society of London, Nov. 11th, 1887, at which McGill's first cases of prostatectomy were presented and discussed.

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McGill's conception of the anatomy of the condition which he proposed to attack was set out with admirable clearness in his writings. He recognises two parts of an enlarged prostate—namely, the part which lies within the bladder, having passed through the internal meatus, and the part which lies outside the bladder in the normal position of the gland. The former he terms the intravesical portion, the latter the rectal portion. He is quite clear as to what and where the seat of obstruction is. "Prostatic enlargements which give rise to urinary symptoms are intravesical and not rectal," and in none of his writings does he depart from this view. "Retention is caused by a valve-like action of the intravesical prostate, the urethral orifice being closed more or less completely by the contraction of the bladder on its contents." Treatment of these conditions, to be effectual, should drain the bladder for a time and remove the cause of the obstruction. How is the obstructing portion of the prostate to be removed? His first three operations, from his own description, must have been rather rough and-tumble affairs without any definite method. It is a piecemeal removal of the growth, partly by tearing with forceps and partly by cutting with scissors or with a strong cutting instrument designed for the purpose. "This is a tedious and not very elegant proceeding; it will, if the operation prove a useful one, probably be improved."

The following year he has got his operation all arranged, and at the Leeds post-graduate course

describes it in detail. "The operation consists of two parts: (1) the opening of the bladder, and (2) the removal of the prostatic valve which prevents the egress of the urine." The removal of the prostatic valve interests us most. We know what the prostatic valve means to McGill. It is the intravesical enlargement of the prostate. A pedunculated middle lobe can obviously be removed with ease, its pedicle being divided with curved scissors. A sessile middle lobe can be removed in the same way, helping the scissors by tearing with forceps. A collar enlargement is removed with greater difficulty. "Care must be taken not to leave any part of the projecting valve untreated." Then he sees that the urethra is patent by passing his finger as far as the first joint into its canal. This is the only description McGill gave of the operation he performed. McGill, as he hoped, improved his technique. The tearing with forceps and cutting with scissors was replaced as far as possible by enucleation with the finger.

How much of the enlarged prostate did McGill remove? There has been a great deal of discussion on this subject, and most of it arose when Freyer, 11 years after McGill's death, claimed to have introduced a new operation by which he removed the whole of the prostate in its capsule. Let us take McGill as his own witness. McGill's descriptions of his operation make it quite clear that he intended to remove only the intravesical portion of the enlarged prostate. There was no object, holding the views he did, in removing anything more. The use of the word "prostatectomy" has led to some misunderstanding. McGill did not claim that prostatectomy meant the total removal of the enlarged gland. "If," he says, "an increased and more prolonged experience shows us that the removal of a portion of the prostate enables patients to dispense with the use of the catheter, we shall have gained a step in the treatment of this condition." Nor did McGill's colleagues and contemporaries regard the operation as anything but a partial removal of the enlarged prostate. His colleague, Mayo Robson, writes thus in support of McGill's operation: "To those who have not done the operation or seen it performed it would seem to be a very formidable matter to remove part of the prostate, but the operation is really simple and more easy than the description would lead one to suppose." At the meeting of the British Medical Association at Leeds in 1889, Reginald Harrison, always a staunch supporter of McGill, opened the discussion on McGill's address as follows. "It appears to me that the suprapubic operation of partial prostatectomy will occupy a permanent place in the operating surgery of this organ." This seems clear enough, but lest the word "prostatectomy" should be misconstrued we have the comment of Belfield in 1890 on its use to guide us. "The obvious etymological inaccuracy of this term is still of slight moment since the real "prostatectomy," extirpation of the entire prostate, is as yet a rare experiment."

McGill's Cases.

In 9 of the 12 cases that McGill published the material removed was very small and was likened to a walnut, a bean, or a small pea. McGill himself referred to the difficulty in getting any but "minute fragments." Two of the cases operated on were obviously malignant and he could not, if he would, have removed the prostate by the method he was using. Three of his cases, however, call for our careful attention—namely, Nos. 9, 18, and 22 in his list. In Case 9 he removed seven pieces of enlarged prostate, weighing altogether 2 oz. 30 grs. I do not think that any surgeon nowadays would consider he had removed the whole prostate if he dug out seven pieces; he would know quite well that he was shelling out separate adenomata, and McGill does not tell us that this went any further than the description of the operations given in the text. In Case 22 he removed the enlarged lateral lobes, the size of a small walnut. McGill employed the term "lateral lobes" in his writings to express the intravesical projection of the lateral lobes, and there is no proof here that he went further than his description of his operation. Case 18 was a different type. "Portions of prostate weighing 2 oz. 40 grs. which surrounded the urethra laterally and below were enucleated in one piece." Here we have a specimen, the description of which resembles very closely that of many of the prostates removed by the methods at present in use. By the courtesy of Mr. J. F. Dobson I was permitted to inspect the historical specimens of enlarged prostate preserved in the museum of the Leeds University. It appears quite clear to me that, with one exception, the specimens of the McGill period represent portions of enlarged prostate and not the whole prostate in the sense that we use the term to-day. No. F.150 "remounted," which corresponds to No. 18 in McGill's list, is different from the others. Comparing it with a modern enucleated prostate, it resembles a medium-sized specimen of the "open variety." The lobes are continuous posteriorly and open along the anterior commissure. The surface is rough, but not more so than that of many of the modern enucleated prostates. If we are to speak of complete prostatectomy, this specimen should certainly rank as a complete enucleation of the prostate.

Did McGill set out knowingly in "a patient obviously dying if left alone" to do a new and more formidable operation than he had described in any of his writings? I think not. He was too good a surgeon to venture on this, and, moreover, he would have described the change in his procedure in the accompanying or subsequent papers. After a careful study of McGill's writings I do not see any evidence that he changed his view that the intravesical portion of the enlarged prostate was the cause of the obstruction he set out to treat and that the removal of the intravesical portion was what he aimed at and was all that was necessary. It has, I think, been claimed that McGill, recognising that he removed the whole of the extravesical portion of the enlarged prostate, adopted the operation of total enucleation of the prostate. Specimens removed subsequent to No. 18, and the absence of any such description in his subsequent writings, do not encourage us to accept this idea, and Mayo Robson's statement criticising Freyer's claims shows plainly that his colleagues did not consider that he removed the whole prostate. McGill died in 1890 at the early age of 40 years. It would be idle to speculate what developments would have been seen at that time had he lived to complete his work, or had his colleagues, with specimen No. 18 and McGill's example before them, had the faith to persevere.

The Perineal Operation.

The first note of dissatisfaction with the operation described by McGill comes from Belfield [19] in Chicago in November, 1890. He has reviewed the cases of suprapubic prostatectomy, which has been performed over 80 times, but he finds that "in nearly one-third of cases on record the radical operation failed to restore voluntary urination," and he harks back to the idea of bladder atony. But he detects another cause for the want of success in these cases. "The intravesical projection may in a given case constitute but a part of the prostatic obstruction," and "the discovery and removal of such outgrowths are not necessarily a complete operation." The prostatic urethra should be stretched and explored by the finger and the discovery of a hard mass or rigid ring should be the signal for perineal urethrotomy and incision or excision of the resisting tissue and thorough stretching. Kümmel, of Hamburg, had the same experience of McGill's operation, and to overcome it he supplemented the suprapubic excision of tumours by sinking the cautery into the prostatic substance.

Gouley,[20] of New York, was the first surgeon to lay down a formulated plan for perineal prostatectomy (1873). The intravesical enlargement of the prostate is first explored through an external perineal

urethrotomy wound. If a median outgrowth or isolated tumours are discovered the prostatic urethra is dilated and incised laterally and the outgrowths removed, preferably by an écraseur. Harrison [21] recommended a similar operation with subsequent prolonged drainage. Henry Morris took part in the discussion on McGill's cases at the Clinical Society in 1887, and he favoured the perineal in place of the suprapubic route. It was probably on the same afternoon or the next day that McGill visited Morris at the Middlesex Hospital, and Morris [22] tried unsuccessfully to convince him that the perineal route was the better.

The first carefully planned perineal operation for the removal of the whole of the enlarged prostate was done by Zuckerkandl [23] in Vienna in 1889. He made a curved prerectal incision, exposed the posterior surface of the organ, incised the prostatic urethra, and dissected the lateral lobes.

Castration.

The year 1893 was to see one of those dramatic changes in the treatment of the enlarged prostate that make the history of the subject so fascinating. Dr. J. William White, of Philadelphia,[24] read a paper at the meeting of the American Surgical Association at Buffalo on "the present position of the surgery of the hypertrophied prostate." White favours something less than the removal of the whole intravesical portion, hoping that shrinkage of the rest will take place after the analogy of the removal of a portion of the tonsil. But he notes that in about 20 per cent. of the suprapubic operations the bladder does not regain its power. At the end of an able address comes the idea that for some years almost banished prostatectomy from surgical practice. "It occurred to me some time ago that possibly the analogy between uterine fibromyomata and prostatic overgrowth was a real one. Castration might have the same effect upon the latter that oöphorectomy does upon the former and cause a shrinkage or atrophy that would result in the practical disappearance of the obstruction. I might add, finally, that I have not had the courage of my convictions, and have never seriously sought to recommend the operation." Surely no suggestion could be more moderately and tentatively put forward. White must have been surprised at the ready response of surgeons to his suggestion. Others were not so diffident as he, and the operation of castration as a method of treatment for prostatic obstruction was rapidly taken up everywhere.

It is difficult to explain this sudden and practically universal change of opinion if prostatectomy as then practised was a reasonably successful operation. The mortality of suprapubic prostatectomy in McGill's table of 24 cases was 16·6 per cent., and Belfield places the mortality of the operation in 1890 at 13·6 per cent. When it is remembered that cases of enlarged prostate were only operated on when catheter treatment had failed, owing to sepsis or the impossibility of passing a catheter, the mortality is remarkably low, although the weaker ones had probably been weeded out by septic catheterisation. Some other cause than high mortality must have prepared the way for the sudden change of opinion. This was to be found in the late results of the operations then practised. The proportion of cases where the bladder did not regain its power or quickly relapsed after operation was at least 20 per cent. It is likely also that the difficulty of the suprapubic operation had an influence. Surgeons at that time were not so familiar as they became later with the suprapubic route.

White had predecessors in the theory and practice of castration for enlarged prostate, although he did not know of them. Tupper, according to Walker,[25] performed orchidectomy with the object of relieving prostatic obstruction on two occasions—namely, in 1882 and 1886. Ramm, of Christiania,[26] operated on two men in 1893. Mears [27] (1893) suggested vasectomy or section of the vas deferens as a less severe and mutilating operation, and a number of surgeons took up the operation and published cases. Mental disturbance was observed after castration in 4 to 6 per cent. of cases, and in this respect the operations of vasectomy and castration were about on the same footing. Wood [28] and Horwitz [29] published lists of cases showing favourable results from castration in suitable cases. Harrison [30] (1900) and Rovsing [31] (1902) recorded cases of vasectomy resulting in cure or improvement. But in spite of the advocacy of many surgeons and the tables of satisfactory results that were published, these indirect operations began to lose their hold on practical surgeons. There were many reasons for this. The mortality which White had expected would be negligible was high (19·4 per cent., Cabot); the mutilation was such that only outstanding success could justify it, and favourable results were to be expected only in a proportion of carefully selected cases. While some improvement took place in suitable cases in a few days, in other cases months elapsed before any change could be detected. Whatever could be expected from a diminution of congestion might be obtained, but whatever might be gained by permanent shrinkage of the prostate was problematical. The number of cases of mental disturbance after castration was very disturbing, and it mattered little that other operations were followed by mental disturbance in feeble old men. White,[32] in a retrospect in 1904, says rather pathetically: "Doubtless many surgeons, probably most surgeons, would to-day dismiss castration and vasectomy from consideration, as summarily as I have rejected interstitial injections or transrectal galvanism. It may be that they are entirely right."

Two important articles on prostatectomy appeared during the early part of the period of indirect operations, and after that, apart from a few unimportant articles, there was silence. One was by Nicoll,[33] of Glasgow, on perineal prostatectomy in 1894, and the other by Fuller,[34] of New York, in 1895. Nicoll recognised the weak point in the perineal operation—namely, the difficulty in getting the prostate well within reach of the perineum. The bladder was opened suprapubically and the prostate pushed down by the fingers of an assistant. The prostate was then exposed from the perineum, the rectum being displaced backwards. The prostatic capsule was incised and the prostate dissected off the urethra. This was the first deliberate attempt to overcome the difficulty of reaching the gland in the perineal operation. Later on, French surgeons were to attack and solve the difficulty in another way, but they based their work on that of Nicoll. In 1895 Fuller [34] summed up surgical opinion in regard to suprapubic prostatectomy and disagreed with it. The argument that the results to be expected from prostatectomy were "indefinite and unsatisfactory is a false one," and is based on cases where the removal of the hypertrophy was incomplete, no attempt having been made to remove the prostatic hypertrophies surrounding the prostatic urethra. "If, however, all the hypertrophies, median, lateral and round about the prostatic urethra are removed . . . the results, as far as the bladder is concerned are, barring mortality, satisfactory." This was a very important step in the attack on the enlarged prostate by the suprapubic route, but little if any attention was paid to it, so strongly did the idea of the indirect operation of White hold the attention of the surgical world. Here for the first time it was laid down that the routine operation of suprapubic prostatectomy must include the "hypertrophies" along the prostatic urethra—in other words, the extravesical or rectal enlargement as well as the intravesical projection.

THE FRENCH WORKERS.

The years 1900 and 1901 saw the renaissance of prostatic surgery. Prostatectomy, both by the perineal and by the suprapubic route, found new advocates, and expanded to become the routine method of treatment of prostatic obstruction. The

handicap of the perineal operation had been the difficulty of reaching the prostate by this route. Nicoll had clearly shown the way in 1894, and now the French surgeons attacked the subject afresh. Albarran [35] followed the subcapsular method of Nicoll, but without the suprapubic incision, and drainage was made from the perineum after reducing the redundant prostatic urethra. From this time for some years a number of instruments which served to depress the prostate during the dissection were introduced by Albarran, Fergusson,[36] Lydston,[37] Delbet, de Pezzer, Legueu,[38] and Young.[39] They all followed and gradually rendered more perfect the prostatic retractor or "desenclaveur" of Albarran, which consisted of a two-bladed staff with angled end passed through the perineum and into the bladder, the blades being then separated so that traction on the shaft drew the prostate down into the perineal wound. Proust [40] gave a very clear and detailed account of the perineal operation. The patient is placed in the inverted sitting position, and a transverse perineal incision made and the prerectal space opened up. A broad-bladed retractor draws the rectum backwards, and a small opening is made in the membranous urethra through which the prostatic retractor is introduced into the bladder. The prostatic urethra is opened for its whole length, and the two lobes are separated from the urethra and bladder-base with scissors. The urethra is partly sutured and the bladder drained through the opening. In America, Young,[41] of Baltimore, has been the chief advocate of the perineal operation, and it is due to his brilliant advocacy and fine record of results that perineal prostatectomy retains a place among American surgeons.

The Suprapubic Operation: Freyer.

In June, 1901, Mr. P. J. Freyer [42] published four cases of what he described as "a new and at first sight formidable operation for radical cure of the enlarged organ—namely, total extirpation of the prostate." He referred to the valuable work of Belfield and McGill, which he regarded as partial prostatectomy. "The first case was not approached with a view to performing a new operation. It was undertaken as a partial prostatectomy in the first instance." It was only after examining the tissue removed that he came to the conclusion that "the whole prostate in its capsule had been removed." Freyer believed that while the intravesical part of the enlarged prostate might cause obstruction, the extravesical or rectal portion of the enlarged prostate was equally the cause of obstruction, and might exist as a cause of retention without any intravesical enlargement. The operation that he recommended consisted in removing the entire prostate with its capsule, the line of separation lying between the capsule and the rectovesical sheath, the capsule being removed and the sheath remaining behind. At first he believed that he was able to preserve the urethra. Very soon, however, it became evident that the prostatic urethra was torn across and partly or completely removed with the prostate.

This conception of the aim which should be pursued in every case of prostatectomy was a new one. No hint of it appeared in any of McGill's writings. Fuller more nearly approaches Freyer's conception. He has the idea, more advanced than McGill or his followers, that the obstruction is extravesical as well as intravesical, and that it is necessary to remove the enlargements along the prostatic urethra. But he is still removing "as much as possible" from within the lobes. There is no ambition to remove the whole of the hypertrophied prostate within its capsule, such as Freyer set out to achieve. A spirited discussion followed the publication of Freyer's cases and his claim to have introduced a new operation. Only two objections of real importance emerge from a mass of verbiage. Firstly, the operation performed by Freyer was the same as that advocated by McGill, and, secondly, the operation that Freyer claimed to be performing could not be done and the patient survive. It is a sign of the confusion that existed among some of the disputants that both of these arguments, each destructive of the other, appeared in the same letter. After stating that the operation had been practised by the members of the staff of Leeds Infirmary for years, Mayo Robson continues: "I have no hesitation in describing Mr. Freyer's idea that he extirpates the prostate entirely in its capsule as impracticable from an anatomical point of view. Even if it were possible to take away the entire prostate, it would be unnecessary and undesirable, seeing that a removal of all the hypertrophies affects a cure of the disease."[43] This letter from Mayo Robson, McGill's chief protagonist, appears to me to be sufficiently convincing that the two operations described by McGill and Freyer were different in conception and different in performance.

The claims of Freyer aroused a new interest in the surgical anatomy of the prostate gland, and a number of investigations on this subject were published during the next ten years by Roberts,[44] Shattock,[45] Cuthbert Wallace,[46] and myself.[47] The two chief points of interest were the fate of the urethra and the line of cleavage in the enucleation. Shattock examined 12 of Freyer's specimens in 1903, and showed that in cases where Freyer had thought the urethra was preserved, the prostatic and sometimes the membranous urethra was removed with the prostate, and even in those specimens where the gland had been parted anteriorly with the object of preserving the urethra, the urethral and vesical mucosa was present in the specimen removed. "Much of the interest in regard to the urethra," says Shattock, "is now gone, since its preservation is no longer regarded as of any moment." The second point was the removal of the entire enlarged prostate in its capsule. The structures composing the wall of the prostatic bed were the subject of investigation and discussion, principally by Cuthbert Wallace and myself. According to the view of the former, nodules of adenomata in the enlarging prostate pressed aside the prostatic tissue and formed a false capsule in which was embedded atrophied gland tubes, and these layers, which he represented as of considerable thickness, formed the wall of the prostatic bed, the operation consisting merely of shelling out adenomata from within the lobes of the prostate. My view, from examination of post-mortem specimens after prostatectomy, was that the wall of the prostatic bed was formed by thickened rectovesical fascia, and that any prostatic tissue found in it was accidental. I showed that the striped muscle of Henlé, which lies between the anterior commissure and the sheath carrying the prostatic veins, appeared in some of the enucleated prostates and marked the line of cleavage as immediately inside the fascial sheath. At a later date (1914) Wade [48] reviewed this subject, and found that the wall of the prostatic bed in eight cases examined after prostatectomy consisted of muscle and fibrous tissue and compressed gland acini. He saw one post-mortem specimen in which he believed that total extracapsular enucleation of the prostate gland had been accomplished, and stated that "cases, however, are not rare where partial extracapsular removal has been carried out" and, where the specimen is examined after removal, portions of striped muscle-fibre are found on its surface. The former statement agrees with the views of Wallace, the latter with those expressed by myself. It seems that many grades must exist between a thick mass of stroma and compressed gland tissue, and a thin partial layer covering the rectovesical fascia forming the lining of the prostatic bed. A corresponding difference will be seen between the specimens removed by different operators and in different cases.

The method described by Freyer was at once taken up by surgeons all over the world. Dramatic as had been the change in practice from McGill's operation to the method of indirect operations of White, the swing of opinion was still more striking when Freyer published his first cases. It was a matter for comment in the early cases of operation on the prostate that

bleeding was not more severe. Yet even in the early cases operated on by McGill, Robson, Teale, and Littlewood [49] we read of difficulties from hæmorrhage. In Freyer's cases, while he constantly demonstrated the absence or the control of hæmorrhage at the time of the operation, there was frequently trouble after the return of the patient to bed which was the source of grave anxiety.

Watching these cases, and with an increasing experience of my own, it became evident to me that hæmorrhage, if not the direct cause of death in many cases, was a predisposing factor. Further, I recognised that Freyer's view that the removal of the prostatic urethra was unattended by a risk of a traumatic stricture, while true in the majority of cases, was unfortunately subject to numerous exceptions, and that the traumatic stricture of the urethra which followed prostatectomy was of a nature very difficult to treat. A further aspect, in which the operation Freyer was performing fell far short of perfection, was post-operative sepsis, and I realised that among other points in technique a clean cavity, without capsular shreds or partly detached masses of gland tissue and mucosa, was necessary in order to prevent persistent infection after the operation. With these defects in view I introduced a method [50] of open operation, in the hope of preventing the occurrence of such complications. The operation was first tried early in 1916, and then in an increasing proportion of cases until the method became my routine practice. The operation avoids placing the finger in the rectum, and hæmorrhage is controlled by free exposure and ligature. All tags, flaps, and nodules that might cause sepsis or post-operative obstruction are removed, and the prostato-vesical orifice is opened up to prevent contraction.

I did not at that time, or indeed for a number of years later, know that there appeared in the collected papers of the Mayo Clinic [51] an illustration showing sutures introduced into the prostatic capsule. The legend of this illustration is "Prostatic capsule partially closed by interrupted sutures." There is no description of the operation. In 1917 there is a note by E. S. Judd, of the Mayo Clinic, of dissection of the prostate with the bladder-base exposed.

Attempts to shorten the convalescence and avoid the dangers of an open cystotomy wound after the operation by immediate closure of the bladder have been made by Ralph Thompson [52] and by Harris.[53] Harris sutures the posterior lip of the internal meatus to the posterior wall of the prostatic bed and partly closes the internal meatus on a catheter retained in the urethra. The cystotomy wound is then closed.

It will not be out of place here to note the death of Dr. W. J. Belfield, of Chicago, which took place on Oct. 4th, 1929. Dr. Robert H. Herbst, of Chicago, writes: "He was an interesting and forceful teacher, and an inspiration to younger men. He will be remembered as a scholar, a kind and willing counsellor, and a true friend."

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(*Continued at foot of next column.*)

DIAGNOSIS OF DIABETES MELLITUS.

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SHORTLY after obtaining a qualifying degree some 30 years ago I found no difficulty in diagnosing diabetes mellitus. After 15 years of specialised study of that disease I have come to the conclusion that the accepted methods of diagnosis are fallacious, and that many patients said to be suffering from that complaint and treated as such would enjoy better health if they were allowed to eat whatever they desired. No responsible individual would make so sensational a statement unless he were able to supply conclusive evidence to support it. I trust that I shall be able to prove myself a responsible individual.

The first step is to supply a definition of diabetes mellitus, which for many reasons is far from easy. It is unfortunate that complex words convey different ideas to different individuals; before attempting a definition it is, therefore, absolutely necessary to find some basis of agreement. The derivation of the name diabetes mellitus is found in the Greek word διαβήτης = a syphon, and the Latin word mellitus, of honey. I think all will agree that if a patient is suffering from true diabetes mellitus and is not treated he must develop polyuria and glycosuria unless he die too soon from some intercurrent malady or accident. It is, however, obvious in the very early stages of the disease that the departure from normal may be so slight that the glycosuria may be intermittent and the polyuria may not have developed.

SIR J. THOMSON-WALKER: *References.*

(*Continued from previous column.*)

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Now if the deterioration in the metabolism be arrested at this early stage, and if this occur without treatment, the question arises whether the patient should be said to be suffering from diabetes mellitus or whether some other term ought to be employed. Seeing that there are arguments in favour of and against the use of different names for the quiescent and progressive stages of diseases, it seems to me that there cannot be any general ruling on the question, but that each condition must be considered separately, depending upon the meaning of the name used. For instance, if an individual is infected with the bacillus of Koch and is said to be suffering from tuberculosis, it may be advantageous to refer to progressive and quiescent tuberculosis; but if one were to refer to the disease as "phthisis," which means wasting, then it would be unwise to say that the patient was suffering from quiescent phthisis. If the disease were quiescent the phthisis would not persist. The term diabetes mellitus to my mind corresponds more with the term phthisis than with tuberculosis, and therefore it should be reserved for the progressive disease and some other name be found for the stationary condition.

Years ago I suggested the name "hypoglycopyresis" to denote a diminished power of burning sugar. There are two objections to this word. (1) It is cacophonous. (2) The chief error in the metabolism may be a diminution in the power of storing sugar whilst that of burning carbohydrate may be unimpaired. An alternative term "stationary hyperglycæmic glycosuria" describes the peculiarity and conforms to the term orthoglycæmic glycosuria. In this paper I wish to emphasise the distinction between orthoglycæmic glycosuria or negligible glycosuria; stationary hyperglycæmic glycosuria or hypoglycopyresis; and progressive hyperglycæmic glycosuria or diabetes mellitus. The physiologist has little difficulty in framing a definition, and states that diabetes mellitus is due to an insufficiency of insulin. When it is pointed out to him that some cases of disease indistinguishable from diabetes mellitus are not benefited by the injection of insulin, he adds: "or when insulin is prevented from acting." At present, however, he is not able to supply any satisfactory explanation of the failure of insulin to act, therefore his definition is of greater academic interest than clinical value.

The definition I am about to offer is for the purpose of this paper, and I scarcely expect it to be accepted as a universal definition of the disease. "Diabetes mellitus is a disease due to a progressive deterioration of the metabolism, primarily of that of carbohydrates and secondarily of that of proteins and fats. This deterioration may progress steadily, sporadically or fulminatingly, and may by medical treatment be arrested or even reversed." The characteristics of the disease are a persistent hyperglycæmia following the absorption of carbohydrate; this hyperglycæmia is often associated with diuresis. Commonly ketosis occurs when the disease is advanced, because the katabolism of carbohydrates is so depressed that the metabolism of fats becomes deranged.

At the present day I need only mention, without going into any detail, that there are many substances besides dextrose which reduce copper when boiled in alkaline solution, and therefore the fact that the urine reduces Fehling's or Benedict's solution does not permit the conclusion that glycosuria is present. (Glycosuria indicates the presence of dextrose in the urine in a quantity recognisable by Benedict's test.) I believe also it is generally recognised that nearly 2 per cent. of true glycosurics are not suffering from any disease but have an unusually low renal threshold for dextrose. These do not develop hyperglycæmia after the absorption of carbohydrates, and are said to have an orthoglycæmic glycosuria. The majority of authors agree that this peculiarity may be disregarded, although a few express the view that persons with a low renal threshold for sugar are more likely to develop diabetes mellitus than those with the normal average threshold. I gather that in America some believe that a low renal threshold for dextrose protects the patient against diabetes mellitus. My own experience supports neither of these views, but rather tends to show that there is no relation between the threshold and diabetes mellitus, and that a low renal threshold for dextrose neither protects the individual from the disease, nor does it render him especially liable to it. I have seen at least three individuals with low renal thresholds develop diabetes mellitus, whilst amongst my cases of the disease only a very small percentage have low renal thresholds for dextrose, a proportion too insignificant to suggest that there is any actual relation between the two conditions. This latter argument would be rendered void if undoubted evidence could be produced to prove that the renal threshold rises after the development of diabetes mellitus.

The characteristic of diabetes mellitus is the persistence of hyperglycæmia for some time after the absorption of carbohydrate. It has been assumed in the past that all cases in which this persistent hyperglycæmia occurs are suffering from diabetes mellitus. This assumption is to me a logical fallacy almost as striking as saying: "All horses are quadrupeds, therefore all quadrupeds are horses." It is true that most patients who have definite diabetes mellitus develop a persistent hyperglycæmia after the absorption of sugar, but I hope to be able to prove it incorrect to assume that all who have this persistent hyperglycæmia are therefore suffering from that disease.

For the safety of patients of medical men who have not the facilities for studying their cases of glycosuria, a rule has been adopted that any patient whose urine reduces Fehling's solution shall be treated as a case of diabetes mellitus until he has been proved to be free from diabetes mellitus. This rule should never be followed by those who can investigate their cases. I adopted it and only recently have recognised how it has led me astray. In some ways it is like assuming that the accused man is guilty and making him prove his innocence. The majority of countries which adopted this law have realised that it caused more miscarriages of justice than when the individual was assumed to be innocent until proved guilty. There will be fewer errors in diagnosis if those of us who have facilities for investigation assume that cases of glycosuria are not cases of diabetes mellitus until we have evidence of that disease other than glycosuria and hyperglycæmia. In my opinion symptoms are of incalculable value, but the sugar-tolerance test is fallacious in the absence of symptoms, even when all the known errors are excluded most carefully.

Errors in the Sugar-tolerance Test.

The metabolism of an individual is not a constant and unalterable process; from time to time it changes in quantity as well as in quality. One of the most definite and dramatic ways of illustrating this fact is by giving a dog a dose of amyl cyanide. The effect on an average dog is negligible, but if that dog be given small doses of ethyl alcohol for a period and then a dose of amyl cyanide, it will die very quickly. The administration of the alcohol has altered the metabolism to such an extent that it has acquired the power of splitting the cyanide ion from the amyl ion, and the dog is promptly poisoned. Less striking changes occur in man on administering alcohol, nicotine, morphine, and many other substances. The power of storing and/or burning carbohydrate is modified in many ways. It has been found that the concentration of sugar in the blood after the administration of a definite dose of sugar rises higher when the individual is mentally fatigued than when he is rested.

All with experience have had opportunity of noting that the carbohydrate metabolism is depressed by anxiety, as summed up in the epigram: "On Wall Street when stocks go down sugar goes up." The metabolism is also influenced by the preceding activity of various organs. If a healthy man be

put upon a diet poor in carbohydrates for a period before a sugar-tolerance test, the concentration of sugar in his blood will rise higher and hyperglycæmia will persist longer than if he has been on ordinary diet for the preceding four days. The reverse also proves true: if a patient with a depressed carbohydrate metabolism fasts for some time before the test is made, the concentration of sugar in his blood will not reach so high nor persist so long as when he has been allowed an ordinary diet for the four days preceding the test. In other words, the fasted healthy man gives a curve which simulates the diabetic, and the diabetic gives a curve which simulates the healthy; therefore before carrying out a sugar-tolerance test with the object of making a diagnosis, the patient should be on an ordinary diet for some days.

Emotion and pain should be guarded against as far as possible. It is my custom to let the nurse take all specimens of blood, and not to see the patient myself on the day of the test until it has been completed. The blood should be collected as painlessly as possible, using a really sharp spring lancet.

Certain toxins depress the power of metabolising carbohydrate; therefore the test will not prove of value unless all known sources of infection are previously treated and eradicated. I think I was the first to draw attention to this some thirteen years ago. The commoner sites of infective foci are the gums, tonsils, antrum, skin, and bladder. Abscesses may lead to a temporary hyperglycæmia in individuals who fail to show any impairment in their carbohydrate metabolism, even when submitted to tests some weeks after the abscesses have healed.

Many observers attach much importance to the concentration of sugar in the blood after a fast of twelve hours, and hesitate to diagnose diabetes mellitus where this falls to 0·1 per cent. or below. I record one typical case in which this opinion would prove incorrect. The sugar-tolerance test has proved so fallacious in my experience that I have become very cautious in drawing conclusions based upon a single test.

There is another method of investigating patients who excrete sugar whilst on ordinary diet, and this also fails to distinguish between a congenital or acquired stationary hyperglycæmic glycosuria and the progressive condition. The patient is placed upon a diet poor in carbohydrate, which can be poor in energy too because it is not to be maintained for long—e.g., 30 g. of carbohydrate, 50 g. of protein, and 80 g. of fat. Taking the potential carbohydrate of protein as 58 per cent. and that of fat as 10 per cent., the total "G" in that diet would be 67 g. The urine is collected, mixed, and measured every 24 hours and the total quantity of dextrose excreted is estimated. This diet is maintained for three days, and then 30 g. of pure carbohydrate are added to it and continued for another three days. Three or more further additions are made, each of 30 gr. of carbohydrate, at intervals of three days. If the sugar excreted remain a constant percentage of that ingested, the diagnosis of diabetes mellitus is excluded, because a peculiarity of that complaint is that the more carbohydrate absorbed the less is utilised. This method again fails to differentiate between a case of early diabetes mellitus and one of stationary hyperglycæmic glycosuria.

Accurate Diagnosis.

It may be said with fairness that so far this paper is purely destructive, and that a fallacious method of diagnosis which may lead to occasional error is better than none at all. With this criticism I am in entire agreement; therefore I shall complete this article by stating the methods I adopt in attempting to arrive at an accurate diagnosis. My anxiety for making an accurate diagnosis must not be interpreted as any want of appreciation of the paramount importance of arriving at a conclusion as rapidly as possible. This is easy to understand, since my experience has shown that the chance of recovery from diabetes mellitus is dependent upon the brevity of the interval between the onset of the disease and the commencement of adequate treatment. When a patient presents himself with the symptoms of thirst, polyuria, and glycosuria, he may be suffering from diabetes mellitus, malignant disease of the pancreas, a tumour of the pituitary gland, or possibly diabetes insipidus together with a low renal threshold for dextrose. Hyperglycæmia would exclude diabetes insipidus. It is wise to assume that the patient is suffering from diabetes mellitus until some sign can be elicited suggesting that a tumour accounts for the hyperglycæmia. Very frequently patients who have never had symptoms seek advice stating that they have consulted several doctors and some have told them that they have sugar diabetes, whilst others have said that there was nothing the matter. It is my custom to explain to these that, however learned the physician they consult, it may not be possible for him to collect sufficient data at a single visit to permit him to arrive at a definite diagnosis; that it is not possible to draw a fine line between health and disease; and that when the departure from the normal average is but slight there is one way and one way only of deciding whether it is due to disease, and that is by finding out whether it is progressive.

If there be no necessity for an early diagnosis I rely upon the results of the sugar-tolerance tests taken at intervals, and refuse to diagnose diabetes mellitus in the absence of symptoms until I have evidence that either the power of storing and/or burning sugar is very much below the normal average or that the power is decreasing. If the time which can be allotted to the diagnosis is brief and the sugar-tolerance test equivocal, then I determine the effect of bacterial toxins upon the carbohydrate metabolism of the patient.

In the absence of symptoms, a diagnosis of diabetes mellitus may be made if, after 14 hours' fast, the concentration of sugar in the blood is above 0·2 per cent., or if, after the administration of 50 g. of dextrose, the sugar in the blood rises above 0·3 per cent. and remains above 0·2 per cent. for more than three hours after the sugar has been administered. If the concentration of sugar in the blood falls to 0·12 per cent. or to the level at which it started within two and a half hours, even if it has risen for a time to 0·3 per cent., or perhaps a little higher, the diagnosis should be only tentative in the total absence of symptoms. The patient should be allowed to remain on ordinary diet for an interval of six weeks if no symptoms develop, and then another test should be carried out, resembling the first in every detail. If the second test shows a very material diminution in the power of the patient to store sugar, then after a week's interval a third test should be made; but if the apparent deterioration be inappreciable the interval before the third test should be about three months. If the power of storing sugar has increased during the interval, the diagnosis of diabetes mellitus should be postponed; the judgment of the observer must be exercised to decide how many of these tests are essential. In the absence of symptoms the diagnosis of diabetes mellitus should be made only when evidence of a progressive deterioration of the metabolism has been established.

I believe most patients are willing to undergo quite a number of tests rather than limit their diets unnecessarily for an indefinite time. It is possible that the inclusion of the patients suffering from stationary hyperglycæmic glycosuria amongst the diabetics accounts to some extent for the alleged rapid increase of the incidence of the disease.

Another method of differentiating between stationary hyperglycæmic glycosuria and diabetes mellitus is by noting the effect of small doses of bacterial poisons on the concentration of sugar in the blood. More than 13 years ago I referred to the fact that some patients suffering from moderately severe diabetes mellitus were able to tolerate a much larger

diet after they had had septic foci extirpated from their gums. This observation has been confirmed times without number.

The effect of infection was driven home very forcibly many years ago by a girl of seven years who re-developed intense glycosuria whilst on a restricted diet which had controlled her glycosuria for several months. The incident was pathetic, because the little patient feared that she would be accused of having eaten something outside her diet which she knew was not the fact. On making inquiries, I learnt that her elder sister would be out of quarantine for varicella in four days' time. The recurrence of the glycosuria permitted me to venture the opinion that the patient would develop spots within a few days, a prophecy which proved correct.

This deterioration in the metabolism of a diabetic due to the absorption of bacterial toxins may sometimes be used to assist the diagnosis. A short time ago the gradual rise of the concentration of sugar in the blood of a patient with what was thought to be a subsiding appendicitis led to the decision that an operation ought not to be delayed, and thus the life of the patient was saved. If a dose of bacterial toxins, such as a vaccine against typhoid fever, be injected into a normal individual, there is a tendency for the concentration of sugar in the blood to fall, which may be due to poor absorption. In my limited experience, vaccines have led to a rise of sugar in the blood of patients suffering from diabetes mellitus, and even in those who have apparently recovered from that disease. In a really doubtful case this was tried with a negative effect, but it is too early yet to be certain that the patient's metabolism will not deteriorate as time passes. This method is merely a suggestion which so far has proved promising.

Owing to lack of data I am not in a position at present to state whether stationary hyperglycæmic glycosuria is associated with the complications which occur in diabetes mellitus, but it is obvious that if the view which is in vogue at the moment—that arterial degeneration in diabetes mellitus is due to an excess of fat in the diet—is correct, the patients who are permitted to continue a diet with a normal amount of carbohydrate may escape that devastating complication.

The evidence upon which the above statements are made consists of two series of cases; one giving sugar-tolerance tests which suggest that the patients are suffering from diabetes mellitus but in which the symptoms have not become any worse upon an unrestricted diet; and the other series consisting of cases which, although suffering from diabetes mellitus, give curves very far from suggestive of that disease.

CASE 1.—The first case which led me to realise that the accepted methods were not satisfactory was a spinster, aged about 31, who was nursing her brother, an alleged diabetic. After testing the urine of her brother she tested her own urine, and found that it reduced Fehling's solution. Although she had not suffered at any time from symptoms suggestive of diabetes mellitus, she was treated by a restricted diet, and was sent for further advice. After 14 hours' fast the sugar in her blood was 0·1 per cent., but the percentage rose to 0·25 within 90 minutes, and did not fall to 0·1 until more than three hours after the administration of the dextrose. A meal fairly rich in carbohydrate raised the sugar concentration in the blood above 0·20 per cent. I came to the conclusion that the patient was suffering from very mild diabetes mellitus. The circumstances made it unwise to tell her so or to limit her diet, and she was told to eat and drink whatever she liked for a year, and then present herself for re-examination. The test carried out in Scotland a year later showed that the power of storing sugar was practically normal. After an interval of yet another year the third test was made. The sugar in the blood then rose above 0·2 per cent., and aroused anxiety in the mind of one medical man, but the curve compared favourably with that obtained two years previously, and the patient continues to eat what she likes and to enjoy good health (Fig. 1). If she had been suffering from diabetes mellitus the disease would have made itself evident after two years of unrestricted diet.

CASE 2.—The second patient placed tentatively upon an unrestricted diet was the brother of the first; he was alleged to have been suffering from diabetes mellitus for five years, and had been treated during that time with a restricted diet. When submitted to a sugar-tolerance test the curve seemed to indicate that his power of storing sugar was below that of the average normal, but only slightly so. I concluded that if he were suffering from true diabetes mellitus and had been treated by diet only, that in all probability the disease would have made progress, therefore I advised him to eat whatever he liked for a year, and then have the test repeated. The test was not repeated, but from time to time I receive evidence that he has not developed hyperglycæmia, and that he has not shown any symptoms of diabetes mellitus (Fig. 2).

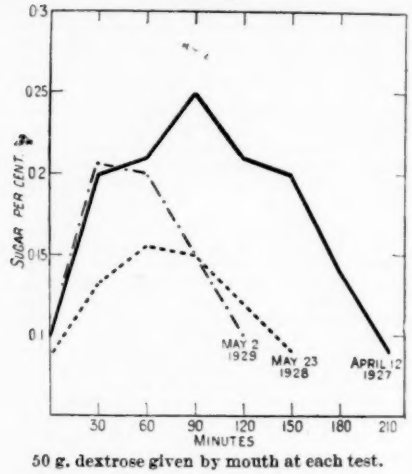
CASE 3.—These two cases were completely overshadowed by a third who gave a history of hæmoptysis during the last eight years and glycosuria for three years. He did not complain of any symptoms suggesting diabetes mellitus. On April 4th, 1927, having been on ordinary food for the previous four days, he was submitted to a sugar-tolerance test. The concentration of sugar in the blood rose to 0·3 per cent. and remained there for half an hour. I came to the conclusion that he was suffering from mild diabetes mellitus, and advised him to adhere to a restricted diet and report progress. He did not return for two years, and then told me that for 21 months he had eaten whatever he liked. A repetition of the test showed that his power of storing sugar had not deteriorated, and therefore in my opinion he was not suffering from diabetes mellitus. He is continuing with a normal diet (Fig. 3.).

CASE 4.—A man, aged 41, sought advice on Nov. 8th, 1927, because he felt out of sorts. His medical adviser found sugar in his urine. The patient did not complain of any symptoms suggesting diabetes mellitus and had insured his life two years previously, paying the standard premium. On Nov. 9th he was submitted to a sugar-tolerance test, and given 50 g. of dextrose by the mouth. The rise and fall of the concentration of sugar in the blood was within the normal average, but the urine secreted during the test contained 7·5 g. of dextrose, proving that the patient's renal threshold for sugar was below the average. I concluded that he had orthoglycæmic glycosuria, but since he had been free from glycosuria two years ago it seemed wise to keep him under observation. He was advised to eat and drink whatever he liked for a year, and then submit himself to another test. On June 13th, 1929, the test was repeated, and the concentration of sugar in the blood rose to 0·3 per cent., and remained there for half an hour. During this test 11 g. of sugar were excreted in the urine, whilst in the previous test 7·5 g. were excreted. Since the patient felt quite well and did not have any thirst I advised him to make no changes in his life, but warned him that he did not appear to be normal, and therefore he should be tested again comparatively soon. He did not return until Dec. 20th, when the test seemed to justify the advice given. The sugar excreted on this occasion was 5·1 g., which was less than on either of the earlier occasions (Fig. 4). He stated that he had never felt better in his life. He was advised to continue as in the past.

CASE 5.—A married woman, aged 40, had sugar found in the urine by her local medical adviser, who informed her that she was suffering from diabetes mellitus. She was submitted to the usual test on Oct. 4th, 1927; the result shown by the curve suggested some abnormality of the metabolism, although this was not proved. She was advised to modify her diet to a small extent, and from time to time samples of her blood were taken, and the concentration of sugar was estimated (Fig. 5). It was found that she could take 30 g. of carbohydrate at a meal without developing hyperglycæmia. In November, 1928, the test was repeated, and since it did not indicate any progress of the disease she was advised to eat whatever she liked for a time. When the test was repeated in May, 1929, the resulting curve seemed to indicate that the advice to return to an unlimited diet was bad, and that by throwing too much work upon the pancreas the disease had made considerable progress. Having had some experience of abnormal curves and learning that symptoms were completely absent, I advised an unlimited diet for another three months. During that time the patient continued to put on weight and gain strength, and when the test was carried out in August it was found that her power of storing and/or burning sugar was quite as good as when she had first consulted me close upon two years earlier. I contend that if I had followed the accepted rule this patient would have been diagnosed and treated as a case of diabetes mellitus.

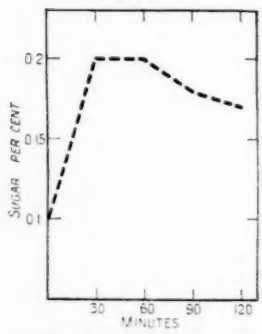
CASE 6.—A man, aged 45, was seen in October, 1923. He gave a history of glycosuria for eight years. He was content to live on a restricted diet, and was not submitted to a sugar-tolerance test until November, 1926, when he was given 30 g. of dextrose by the mouth. The test suggested

FIG. 1.



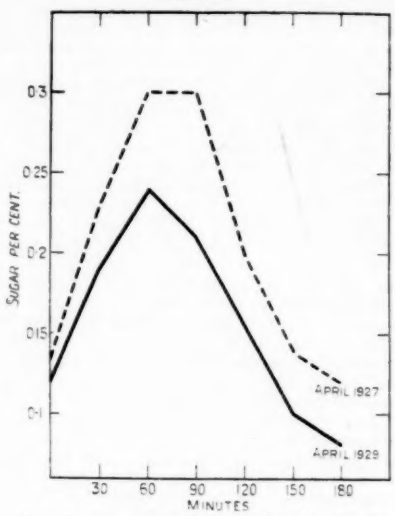
50 g. dextrose given by mouth at each test.

FIG. 2.



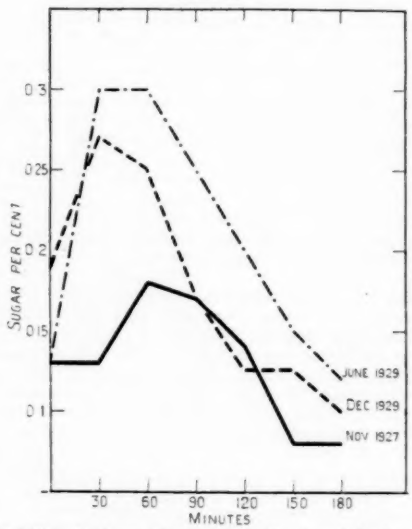
50 g. dextrose given by mouth.

FIG. 3.



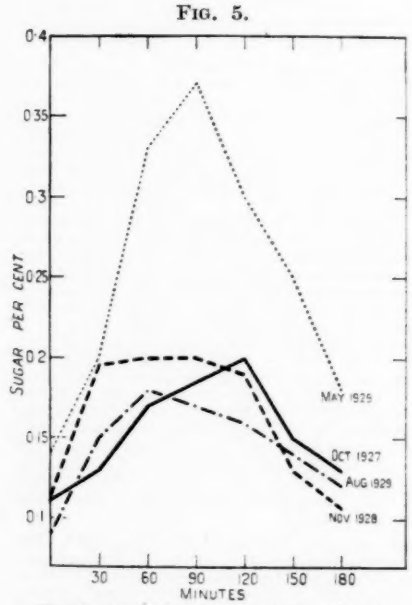
50 g. dextrose given by mouth at each test.

FIG. 4.



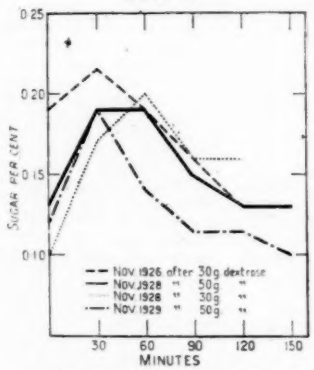
50 g. dextrose given by mouth at each test.

FIG. 5.



50 g. dextrose given by mouth at each test.

FIG. 6.



Dextrose given by mouth.

some impairment in the storing of sugar, and the patient was advised to continue his restricted diet. Two years later a similar test was made, and also another test with a dose of 50 g. of dextrose. By that time my experience was sufficient to allow me to advise the patient to eat and drink whatever he liked. The test carried out in November, 1929, shows that the advice was good (Fig. 6).

CASE 7.—A man, aged 56, sought advice for pains in the limbs. The diagnosis of diabetes mellitus had been made in 1918 by a very capable observer after the patient had been in a nursing home for three weeks. He had been put upon a restricted diet which he had kept for two years. For nine years before he consulted me he had eaten and drunk whatever he liked. In December, 1928, he was submitted to the test, the result of which is recorded in Fig. 7. I cannot help thinking that the curve obtained in 1918 could not have been much better than the one in 1929, otherwise the diagnosis of diabetes mellitus would not have been made. The nine years of unlimited diet had not led to any appreciable advance of the disease, and therefore this is a case which does not need treatment, and is not one of diabetes mellitus.

CASE 8.—A spinster, aged 40, had a family history of diabetes mellitus. Her symptoms had first appeared in August, 1928, and hyperglycæmia had been found. She was submitted to a sugar-tolerance test on Jan. 4th, 1929. The concentration of sugar began at 0·09 per cent. after 14 hours fast, and fell to 0·10 per cent. within two and a half hours (Fig. 8). This curve is not typical of diabetes mellitus; but there was no doubt that the patient was suffering from that complaint. A short time later she caught influenza, and required more than 20 units of insulin twice daily whilst on a diet of 80 g. of carbohydrate and 35 calories per kilogramme bodyweight per diem.

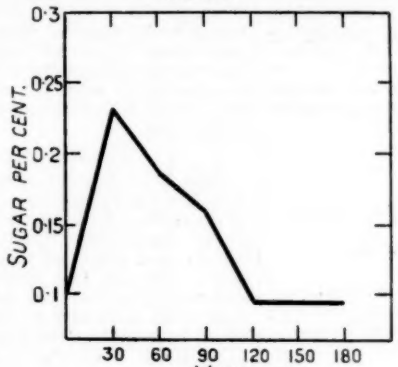
CASE 9.—A major, aged 40, was refused for life insurance on

account of glycosuria. A sugar-tolerance test on Oct. 19th, 1927, showed a poor power of storing sugar, but since the patient had been subjected to an anæsthetic comparatively recently, and he did not present any signs of diabetes mellitus, he was advised to take a holiday and to report in six weeks' time. Seven months later a second test was made, and then it was found that the curve was that of diabetes mellitus. The hyperglycæmia was verified on several occasions. Many tests of non-diabetic patients appear to record a poorer power of storing sugar than this patient possessed, demonstrating how unwise it is to attach too much importance to the sugar-tolerance test (Fig. 9).

CASE 10.—A man, aged 49, had had intermittent glycosuria for a short time, and was submitted to a sugar-tolerance test on July 1st, 1924. The concentration of sugar in the blood rose to 0·33 per cent., but fell to 0·125 per cent. within three hours. After three years of unrestricted diet the sugar in the blood at 4.30 P.M. one day was found to be 0·14 per cent. On June 5th, 1929, the patient was submitted to a sugar-tolerance test, which showed very considerable delay in the storing of sugar. The first curve might be described as the lag curve of Mac-Lean. It probably has nothing to do with delay in the activity of the pancreas, but is simply due to an absorption of sugar at a rate greater than the average (Fig. 10). The second curve suggests a slow development of diabetes mellitus, but the patient enjoys good health and has not shown any signs or symptoms of the disease.

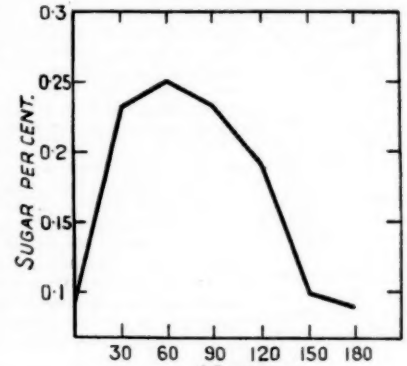
CASE 11.—A married woman, aged 30, sought advice for vulvitis, and wore a ring for prolapse of the uterus. Her medical adviser found sugar in the urine. I have seen close upon a hundred cases of orthoglycæmic glycosuria; none of these has had balanitis, and only two vulvitis. A glycosuria accompanied by balanitis or vulvitis will very probably prove to be diabetes mellitus. The patient was submitted to the usual sugar-tolerance test on July 26th, 1929; the concentration of sugar in the blood rose to 0·30 per cent., and had fallen to 0·15 per cent. after two hours. The patient expressed a desire to go abroad in six months' time, and I therefore advised investigation. She was placed upon a modified diet for a time, but was given more than 120 g. of carbohydrate in her diet during the four days previous to August 20th, when she was submitted to a second tolerance test. It will be seen that on that occasion the curve was that of the average normal (Fig. 11). She was then given a diet containing 150 g. of carbohydrate, a considerable fraction of which was cane-sugar; she did not develop hyperglycæmia. Another tolerance test on August 26th showed that the curves obtained were too variable to justify a diagnosis. The patient was quite willing to be vaccinated against typhoid and paratyphoid and I made observations on the effect of these bacterial toxins upon the concentration of sugar in the blood. After the injection of the vaccine the sugar in the blood was found to be low. This case is recorded in order to show how inadequate are our methods for diagnosing diabetes mellitus.

FIG. 7.



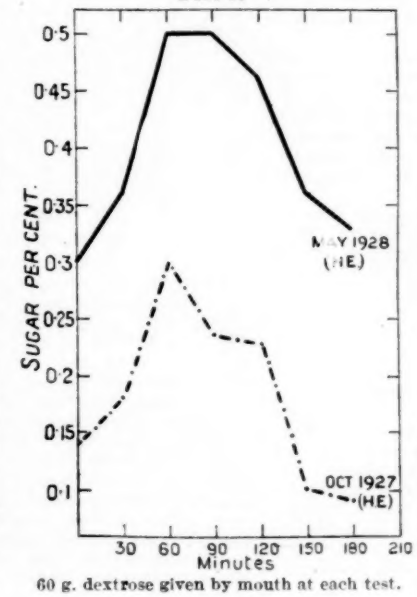
50 g. dextrose given by mouth.

FIG. 8.



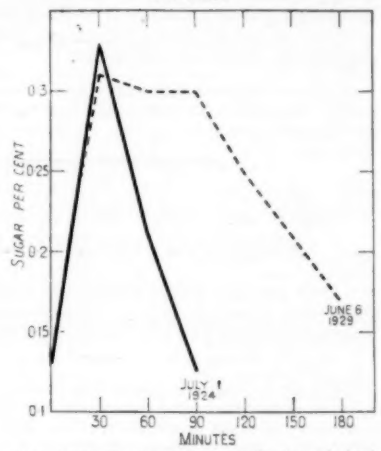
40 g. dextrose given by mouth.

FIG. 9.



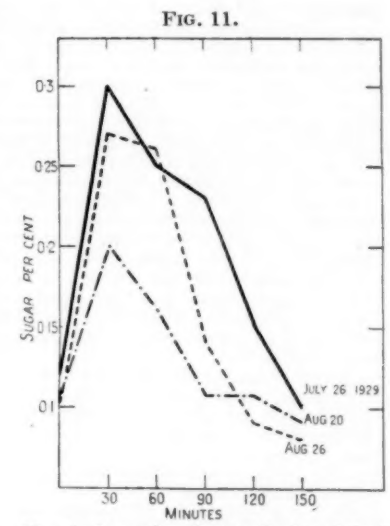
60 g. dextrose given by mouth at each test.

FIG. 10.



50 g. dextrose given by mouth at each test.

FIG. 11.



50 g. dextrose given by mouth at each test.

Summary.

1. Hyperglycæmic glycosuria is not necessarily diabetes mellitus.

2. The diagnosis of diabetes mellitus in a patient free from symptoms should be based either upon

a very considerable loss in the power of storing and/or burning sugar or evidence that the power is decreasing.

3. A hyperglycæmia during protein shock is suggestive of diabetes mellitus.

It is with great pleasure that I record my thanks to Sir Humphry Rolleston for a number of suggestions incorporated in this paper.

VIRUS STUDIES CONCERNING THE ÆTIOLOGY OF PSITTACOSIS.

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NEW and welcome light has recently been thrown on the causation of psittacosis by the experimental evidence brought forward by Drs. S. P. Bedson, G. T. Western, and S. Levy Simpson [1] of the London Hospital, to the effect that the budgerigar can be fatally infected either by suspensions of organs of parrots or by blood taken from patients suffering from this disease. Since the pathogenic principle here concerned is capable of passing through filters that hold up ordinary bacteria, and the disease can be transmitted in series, there would seem to be little doubt that their contention that a filtrable virus is here operating is justified. Suggestive as this new evidence is, however, further proof admittedly is required before the thesis that psittacosis is due to a virus can be regarded as established.

Among the group of nine cases of psittacosis recently described by Sir Thomas Horder and Dr. A. E. Gow [2] two, Cases 3 and 9, were admitted to St. Bartholomew's Hospital and died apparently of the disease. That circumstance, and the arrival of the bodies of two dead parrots that had belonged to the last case (which I owe to the courtesy of the Ministry of Health), afforded an opportunity of investigation which I now wish to report.

As Sir Thomas Horder and Dr. Gow point out in their paper, both patients failed to give any evidence of infection by *Bacillus psittacosis*. These negative results were confirmed by the examination made post mortem. Nor could any organisms of the enteric group of recognised significance be found. Bacteriological examination of the two parrots was equally negative as regards *B. psittacosis* or non-lactose-fermenting organisms.

Search was next made for the presence of a virus, the materials being injected into budgerigars as recommended by Bedson and his colleagues. Chaffinches were also tried in some of the experiments, but were found to be refractory. In the majority of the tests mice were also used, a pair being injected at the same time with the same doses and then kept in the same stable.

Procedure in preparing the suspensions was as follows. A bacteriological examination was first made of the various organs and when seriously infected with bacteria such as cocci, these tissues were placed in 50 per cent. glycerin in the refrigerator for a week, or else a suspension was made at once and passed through a Seitz filter. If free of bacteria the tissues were used direct as it was felt that a good portion of any virus that might be present would be likely to be held up by the filter, and it was desired to give any pathogenic agent that might be present as good a chance as possible. In making the suspensions a weighed amount of tissue was ground up in a mortar with distilled water sufficient to make a 1 : 20 suspension, and if filtering was employed this suspension was diluted first to 1 : 50 because stronger suspensions than that of freshly ground up material were apt to clog the filter even when first passed through filter paper. Uniformly the filtrates were found to be sterile. The injections were made intramuscularly into the birds, and both subcutaneously and intraperitoneally into mice, care being taken to give not over 0·5 c.cm. by the latter route. The usual dose was 1·0 c.cm. The results have been as follows.

[1] THE LANCET, Feb. 1st, p. 235, and Feb. 15th, p. 345.
[2] Ibid., March 1st, p. 442.

Infection from Human Cases.

Case 3 of Horder and Gow. At the autopsy on Feb. 3rd the spleen was removed, and after a portion of its surface had been seared with a hot iron a piece of the underlying tissue was cut out, suspended in water, and injected into two budgerigars and two mice. One of the birds got ill between the fifth and seventh day, but later recovered. The other died in 21 days and no bacteria could be found in its blood or organs. The mice were unaffected (21 days).

A third budgerigar was inoculated with the filtrate of this suspension of the patient's spleen. It died on the tenth day with sterile organs. A mouse inoculated with a suspension of the spleen and liver of this bird died in 11 days with sterile organs, and a suspension of its spleen in turn killed a further mouse in 17 days again with sterile organs.

Pieces of the lung and brain (pons) of this case were preserved for a week in 50 per cent. glycerin and then ground up and injected into two budgerigars. The bird that received the lung suspension died on the tenth day with sterile organs. The other bird was unaffected. No less than three of the five budgerigars injected with material from this case therefore died and a fourth got ill and recovered.

Case 9 of Horder and Gow. Blood (one part) on the fourteenth day of the disease in four parts citrated saline was injected into two budgerigars, but without effect. It also had no effect on four mice.

The post-mortem examination on Feb. 14th did not take place until 36 hours after death. Spleen suspension, unfiltered and filtered, and secretion taken at the bifurcation of the trachea diluted in broth and filtered were injected into two budgerigars and six mice. One of these budgerigars was unaffected in six weeks, the other died in 38 days with sterile blood and spleen.

Two mice injected with the unfiltered spleen suspension of this patient both died on the thirty-third day with sterile organs. Another pair that received the filtrate of the same material both became ill on the twenty-second day; one died the next day, the other survived till the forty-second day. One of two mice that received the filtered bronchial secretion of this case was dead on the fourth day and contaminated; the other survived till the forty-second day. None of these five mice showed any evidence of a bacterial infection. Nevertheless, passage was successful to further mice by using the spleens of four of them; but in each instance only one of the pair of mice inoculated died, the time taken to produce death being from 10–19 days. In all cases cultures from the spleens of the dead mice were negative.

Properties of the Virus Strains as Revealed by Experiments on Mice.

As the mouse is susceptible, an attempt was made to obtain information by employing that animal, the spleen being used for transference after its sterility had been proved by culture. Passage experiments in this way with the virus derived from the human cases and from the parrots respectively soon brought out the fact that the pathogenicity for the mouse of the virus from the birds was far more active and enduring than that of the virus from the human cases. Thus the virus obtained from the filtered spleen of the first case via the budgerigar came to a standstill after passage through three mice in succession. The filtered suspension of the organs of the second human case caused death in a mouse on the twenty-third day, and the spleen suspension of that animal killed one of two mice injected with it in ten

days. Two further mice now died in six and ten days, but after another passage the virus lost its potency, and further attempts to obtain a passage virus from mice that succumbed to injection with the organs of this patient or with filtrates therefrom did not succeed for more than one or at the most two generations.

A very different result was obtained with the virus derived from the parrots. In the case of *Parrot I* (which died at No. 9 patient's residence on Feb. 6th), two strains of the virus have been under study. Of these strain A was derived directly from the unfiltered spleen suspension of the parrot. The primary mice both died on the sixth day, the second pair in five days, the next pair in four days, and subsequent pairs have nearly all died in three days. Similar results were given by strain B derived from the filtrate of the same parrot's spleen, where the first mouse died on the tenth day, and subsequent mice in six, four, three, and two days in succession. Both these strains are still as active as ever, A being at its fifteenth passage and B at its tenth.

In the case of *Parrot II* (which came from the same house and died on Feb. 7th), although the primary mice did not die until after 18–24 days, the filtrate of the pooled spleen suspension of the two latter mice killed in nine days, and death in subsequent passages occurred in six days, three days, and two days successively. This virus is also showing no evidence of deterioration, and is now at its eighth passage.

Attention accordingly has been concentrated on the parrot virus, and the following observations were made on mice with strain A of Parrot I.

Characters of the Virus Obtained from Parrot I.

1. *Pathogenicity for the Budgerigar.*—The virus derived from the spleen of Parrot I after passage through two mice in succession was filtered, and the filtrate divided into two parts. One of these portions was heated to 55° C. for 30 minutes. A budgerigar and two mice were then injected severally with 1 c.cm. of each portion with the following result.

Unheated Filtrate: The budgerigar died on the twenty-eighth day; one mouse died on the sixteenth day, the other on the nineteenth.

Heated Filtrate: The budgerigar and one mouse were still unaffected two months after injection; the other mouse died on the twenty-fourth day.

Two mice injected with the spleen suspension of the first budgerigar died in seven and nine days respectively, and in two further passages the mice died in 4–6 days and in 2–4 days successively. By passage, therefore, the parrot virus rapidly increased in virulence for the mouse after recovery from the budgerigar.

2. *Effect of Filtering.*—While this parrot virus is certainly capable of passing through the Seitz filter, comparison of the action on mice of the same suspension of virus before and after filtering has repeatedly shown that the unfiltered virus kills as a rule far more surely and quickly than the filtrate.

Thus in an early experiment the unfiltered virus killed both mice in five days, the filtrate took seven days; after passage, the unfiltered virus took four days, the filtrate nine to ten days, and after further passage the unfiltered virus killed both mice in three days, while the filtrate took no less than 14 days to produce death.

The probable explanation is that the filter retains a proportion of the virus. A parallel experiment with vaccinia virus showed that apparently all of it was retained by the Seitz filter, since a suspension of that virus active to a dilution of 0·00001 c.cm. before filtering became inert. Even when 2 c.cm. of the filtrate was injected into a rabbit's testis no lesion and no immunity resulted.

3. *Effect of Heat.*—The experiments on mice have indicated that while exposure for 30 minutes to 55° C. attenuates the virus, it does not always destroy all of it. On several occasions a proportion of the mice injected with the heated virus have died generally considerably later than those receiving the raw virus. Passage was recently successful with the spleens of two of these mice that had succumbed late to the heated virus. Vaccinia virus behaves in a similar way when exposed to 55° C. for 30 minutes. The effect of higher temperatures is under investigation; exposure for 30 minutes to 80° C. and 100° C. appears to inactivate the parrot virus completely.

4. *Effect of Desiccation and of Disinfectants.*—The following result was obtained in a preliminary experiment.

Virus control: both mice dead in three days. The same virus after being dried in vacuo and then resuspended; one mouse died in six, the other in 11 days. The same virus after exposure for 30 minutes to 1:10,000 potassium permanganate at room temperature; one mouse died in four days, the other in five. Some of the virus received the addition of 0·5 per cent. carbolic, and was then exposed for 20 hours at 37° C.—a treatment that kills non-spore-bearing bacteria. The single mouse here injected died on the thirteenth day, thus confirming a result referred to in a preceding paragraph. The same virus that was used for these tests was also exposed for 30 minutes to 55° C. One mouse died in 13 days, the other was unaffected a month later when discarded.

It would seem from these results with mice that the parrot virus offers considerable resistance to desiccation and to certain disinfectants.

The effect of adding ether to a suspension of the virus was tried in the following experiment.

The pooled spleens of the mice used for the seventh passage of the virus were ground up in 12 c.cm. of distilled water, and this was divided into two equal parts. One-tenth part of ether was then added to one portion, and both were then well shaken and placed in the cold store for a week. At the end of that time each portion was taken out, shaken up, and after standing for five minutes dilutions were made from each and tested on mice. The dose throughout was 1 c.cm. and the results were as below. (The figures refer to the days that the mice took to die.)

Spleen dilution.	No ether.	Etherised.
1:100	4, 4	6, 9
1:1,000	5, 6	7, 9
1:10,000	5, 9	8, 25

The ether therefore weakened, but did not destroy the virus. Passage was successful from the mouse that survived for 25 days.

5. *Distribution of Virus in Mice that Succumbed.*—The pooled spleens of the two mice used for the fourth passage of the virus were tested on mice in a dilution of 1:100, 1:1,000, and 1:10,000 respectively, and the first pair died in three days, the other two pairs in seven days. The blood and spleen of each of the last pair were then suspended in distilled water, and a series of dilutions made and tested on mice. The results are shown below; as before, the figures refer to the number of days that the mice took to die.

Mouse.	Tissue.	Dilutions. 1:100.	1:1000.	1:10,000.	1:100,000.
59	Blood	6	7	8	S.
59	Spleen	6	13	7	9
60	Blood	S.	10	8	S.
60	Spleen	4	4	6	7

S. = Survived.

It would seem that the virus was more abundant in the spleens of both mice than in their blood.

Action on the Rabbit of Parrot Virus After Mouse Passage.

1. *Cutaneous Experiments.*—By employing an aqueous suspension of the spleen of a passage mouse both strains of virus from Parrot I, and also that from Parrot II, were tested on the shaved skin of the rabbit.

Falling dilutions were made as in the last experiment, and 0·2 c.cm. of each was then injected intracutaneously. It

was found that all three strains produced a raised papular swelling that became bright red in from 40–60 hours, lasted for two or three days, and then faded. The colour of this eruption varies from a faint rose pink to a bright scarlet according to the activity of the strain and also to the particular rabbit. Pale areas appear in some of the papules, but so far no certain vesicles have been seen. The diameter of the papules varies from over a centimetre to a few millimetres according to the dose of virus injected. The local lymphatic glands are swollen and may also be deeply congested. When scarification was tried and the virus applied to the surface of the skin a crop of papules followed, but the result was less definite and striking than when the intracutaneous route was used.

Advantage was taken of this action of the parrot virus on the rabbit's skin to examine once more the effect of passing the virus through a Seitz filter, and also of heat, &c. From present results it would seem that the pathogenicity of the virus for the rabbit's skin is far more easily inactivated by these measures than is its lethal effect on mice, as indicated by experiments in a preceding section; for a 1 per cent. suspension of mouse's spleen containing virus active on the rabbit's skin up to a dilution of 1 : 10,000 gave no result at all, either after being filtered, or after being heated for 30 minutes to 55° C. A comparable test carried out with vaccinia virus gave a broadly similar result.

The papular eruption produced by the parrot virus when injected intracutaneously into the rabbit bears a close resemblance to that excited under similar circumstances by certain strains of herpes virus of human origin.

2. *Action on the Rabbit's Central Nervous System.*—In case of each of the three strains of parrot virus suspensions of the spleens of passage mice in distilled water were injected intracerebrally into rabbits in a dose of from 0·1 to 0·2 c.cm. followed by 1 c.cm. of the same material intravenously. Further particulars and the results were as follows.

Parrot I, strain A, eighth passage mice spleens pooled, 1 : 100. The rabbit died in 48 hours. Parrot I, strain B, sixth passage mice spleens pooled, 1 : 100. The rabbit became paralysed on the third day and died the same day with convulsions. Parrot II, fourth passage mouse's spleen, 1 : 50. The rabbit became ill on the fourth day; it developed some head retraction on the seventh day and died on the eleventh. After death the meninges in two of these rabbits showed some congestion, but no other naked-eye changes were observed. The meningeal secretion and the heart's blood of all three showed no bacteria either in films or cultures. A repeat experiment was carried out with Parrot I, virus strain A, in order to see the effect of passing the virus through a Seitz filter and of heating the filtrate for 30 minutes to 55° C. The rabbit that received the unfiltered and unheated virus became paralysed on the fourth day and died on the fourteenth with sterile blood and meningeal exudate. The rabbit that received the unheated filtrate went off its feed for a few days, but developed no obvious paralysis and recovered. The third rabbit was unaffected. Both the last two rabbits are alive and appear to be quite normal at the present time—over six weeks since injection.

Sections have been examined of the central nervous system of the rabbits that succumbed to the parrot virus. All of them show evidence of meningitis, the exudate being chiefly composed of lymphocytes, and the meninges slightly thickened at places. In the case of two of these rabbits there is also some evidence of encephalitis—e.g., besides a pronounced degeneration of the nerve-cells occasional cuffing of the vessels in the white matter, and very rarely a few small inflammatory foci.

In the case of two of the rabbits that succumbed to intracerebral inoculation of the parrot virus a preliminary attempt was made to ascertain the distribution of the virus by titrating dilutions of the blood and organs on a rabbit's skin, and in the case of the first rabbit this was supplemented by inoculating mice with dilutions of 1 : 1000 and 1 : 10,000 of the blood, urine, spleen, brain, and nasal mucous membrane. The results given on the rabbit's skin indicated that the virus was more active and abundant in the spleen and nasal mucous membrane than elsewhere, and mice that received the 1 : 10,000 dilution of both these materials succumbed with sterile spleens from which the virus was successfully passaged to further mice. These observations, however, afford merely an indication, and require to be confirmed and considerably extended before an adequate picture can be obtained of the distribution of virus in rabbits that succumb to its action.

The above experiments refer to the parrot virus alone. An attempt was made to infect a rabbit intracerebrally with the virus obtained from the spleen of Case 9 of Horder and Gow by using a suspension of the spleen of the second passage mouse, but the result was unsuccessful. This same virus also produced only a slight colourless swelling when injected into the rabbit's skin.

Control Observations on Normal Birds of the Parrot Tribe.

Through the courtesy of Colonel A. E. Hamerton, pathologist to the Zoological Society of London, and of Mr. Seth Smith, superintendent of the Society's Gardens, it has been possible to make some control observations on normal birds of the parrot tribe killed accidentally. The spleens of these birds were taken out by Colonel Hamerton in course of his routine post-mortem examination, and kindly forwarded to me. On arrival these spleens were ground up in distilled water in the same way as the spleens of the parrots associated with Case 9 of Horder and Gow and injected into mice.

The birds examined in this way consisted of a normal example of the Amazon parrot *Amazona aestiva*, the kind that has been especially under suspicion in regard to psittacosis. The spleens have also been examined in the same way of a blue and yellow macaw, a rose-crested cockatoo, a Tovi parakeet, and four normal budgerigars. The mice, of which six were used for the first bird—the Amazon parrot—and two for each of the others, were kept under observation for a month. When a mouse died cultures were made from its spleen, and, if negative, passage was tried to further mice.

The result of this investigation was as follows. Of the eight birds examined six gave negative results. In the case of one of the budgerigars, however, one of the two primary mice injected with the spleen suspension died on the sixteenth day with a sterile spleen. Passage was successful to a pair of mice that succumbed on the tenth day and from them to a further mouse that died on the fifth day. This virus produced a moderately typical eruption on the skin of a rabbit, but it seems to have become attenuated latterly since the more recent mice have successfully resisted its action.

The other positive case was that of the blue and yellow macaw that was not quite a normal bird, as it had (as Colonel Hamerton pointed out) a mycotic deposit in one of its air sacs. One of the pair of mice inoculated with the spleen suspension of this bird died on the nineteenth day with sterile spleen. Both of a pair of mice to which transference was made died in four days, and from them passage has been successful through seven generations. The virus at present shows no signs of deterioration, but appears to be increasing in virulence for mice. This macaw virus when injected intracutaneously into the rabbit produces a bright red papular eruption indistinguishable from that excited by the virus strains from the two parrots associated with Case 9 of Horder and Gow. A rabbit injected intracerebrally with the macaw virus became paralysed in its front legs on the third day and remained in this condition for ten days, after which convalescence set in, and it is now able to move its front paws quite well and is gaining in weight.

Intracerebral Inoculation of Mice.

The neurotropic capacity of the parrot virus revealed by the rabbit experiments appeared to afford a possible explanation of the mode of death of certain passage mice that developed a form of general motor paralysis towards the end. Observations are now in progress in which the effect is being determined of the parrot virus when inoculated by the intracerebral route.

In an experiment with strain A, of Parrot I, during its fifteenth passage, one mouse received the usual dose of

1 c.cm. of the virus in the routine way by the peritoneal and subcutaneous routes, and another received one-tenth of that dose intracerebrally. Both mice were dead by the third day, and the abundance of virus in the brain and spleen of each was determined by preparing dilutions of each organ from 1 : 100 to 1 : 10,000, and injecting 0·2 c.cm. of each into the skin of a rabbit. The result showed that both spleens contained the virus up to the 1 : 10,000 dilution, and that the brain of the mouse injected by the usual routes gave a negative result with the 1 : 100 dilution, whereas that of the other gave a positive result up to a dilution of 1 : 1000. In a parallel experiment with strain B from the same parrot, a mouse that received the virus by the usual routes died on the seventh day, and another that received one-tenth of the dose intracerebrally developed on the same day a complete flaccid motor paralysis limited to its hind quarters, and died the following day.

Comments.

Confirmation, therefore, has been obtained of the presence of filtrable virus in two cases of psittacosis, and in two parrots associated with the second case.

The outstanding feature of the experiments reported in this paper is the manner in which the strains of virus obtained from the parrots associated with the second case of psittacosis have maintained and increased their virulence by passage through mice. The dermotropic and neurotropic affinities displayed by this virus after mouse passage for rabbits suggest that it may belong to the same group as the herpes virus. The relation between that virus so frequently carried by human beings, and the present one derived from parrot forms one of the problems calling for investigation.

The virus derived from the human cases has not so far displayed the same degree of pathogenic stability for mice as that derived from the parrots. Experiments are at present in progress in which strains of herpes of human origin are being passaged through mice, and the first of these strains has come to a standstill after passing through three mice in succession. Further experiments on this question are required, and also observations in which blood and material from human beings suffering from various febrile conditions are investigated in the same way. The mouse may prove to be a more valuable means for the isolation and study of viruses than has hitherto been realised.

AN EXPERIENCE WITH AVERTIN ANÆSTHESIA IN GYNÆCOLOGY.*

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The efforts continually being made to improve our anæsthetic drugs testify to a general sense of dissatisfaction with the present methods of surgical anæsthesia. It must be a matter of common opinion that the fact that such drugs as chloroform and ether are still in common use for complete anæsthesia is eloquent testimony to the poverty of our present resources. The saturation of every tissue with such irritant and toxic materials, as the only available method of bringing under control the specialised sensory apparatus of the body, is so crude and so unscientific as to carry with it its own condemnation, and to deserve no greater sanction than that implied in the exigencies of the early and necessary developmental phases of every art. The discomfort and even dread that their employment often provokes, the damage to the vital organs, and the common post-operative sickness and pulmonary complications which they are apt to induce, add much to the torture of the patient and to the anxiety of the operator.

Any method of general anæsthesia which professes to provide safety of induction, whilst eliminating much of the accessory danger and discomfort, is worthy of most serious attention. An experience with avertin, though still limited and experimental, has encouraged me in the belief that with this drug we may possess such an improved method of administration.

Avertin was introduced to British surgery in 1929, first by Morrin,[1] of Dublin, and, later, by Blomfield and Shipway,[2] of London. The latter workers carried out a test with the drugs at the instance of a conjoint committee set up by the Medical Research Council and the Section of Anæsthetics of the Royal Society of Medicine. All these anæsthetists speak of its potency and its potential dangers, but at the same time they express their belief that it is "a valuable addition to the drugs at the disposal of the anæsthetist, and that if used with due care and moderation its advantages can be taken advantage of with perfect safety."[2]

Method of Administration.

The method which I employ follows closely that laid down by the manufacturers and the anæsthetists above mentioned. On the evening before the operation the bowel is washed out with an enema. No subsequent enema is given on the morning of the operation, as any fluid retained may interfere with the dilution of the anæsthetic solution. One hour before the operation one-eighth of a grain of a morphine salt is given hypodermically. In the earlier cases a quarter of a grain of morphine was used and respiratory depression was sometimes marked, in one case causing anxiety. Since halving the dosage the respiratory depression has been less pronounced, and in no instance has there been reason for worry. Some observers state that they have with advantage discarded the preliminary sedative entirely.

The avertin is supplied as a liquid in which the drug is held in solution by amylene hydrate; each cubic centimetre of the fluid contains 1 g. of avertin. The amount to be given is accurately proportioned to the body-weight, the safest maximum ratio according to common finding being 0·08 to 0·1 g. per kg. of the patient's weight, the smaller dosage being employed for weakly individuals. The makers supply a detailed chart by which the quantities can be easily and rapidly determined. The drug, measured out freshly for each patient, is added to distilled water heated to 40°C. and shaken to make a solution of 2½ to 3 per cent. The temperature must not be raised beyond this, otherwise there is the risk of hydrobromic acid being produced; this is irritating to the bowel. To exclude the presence of this material one or two drops of a 1 in 1000 solution of Congo-red are added to 5 c.cm. of the avertin solution. When the impurity is present the colour turns blue. I may add that on no occasion have we ever found it necessary to discard the solution as prepared for use on account of the presence of this impurity.

The anæsthetic is administered before the patient is removed from bed. It is introduced slowly into the rectum half or three-quarters of an hour before the operation by means of a soft tube passed in about four inches. The patient lies on the side to prevent sagging of the jaw and tongue. It is advisable for the anæsthetist to be present or immediately available throughout the administration, although in general we have found it both safe and expedient to leave the actual administration itself to a nurse who has experience in the procedure.

Amongst the strongest commendations of the drug are the ease, comfort, rapidity, and certainty of the anæsthesia. The psychical strain and unpleasantness inseparable from inhalation methods are absent. In the certainty and rapidity of its action it is superior to the rectal ether method. Consciousness is often lost in a few minutes. The maximum anæsthesia is attained in about half an hour, and for this reason the operation should not be commenced before at least this interval has elapsed. In about 25 per cent. of

* A paper read before the Edinburgh Medico-Chirurgical Society on March 5th.

the cases the anæsthesia is sufficiently profound for a minor and in a smaller proportion for a major operation. Ordinarily the anæsthesia requires to be supplemented by the inhalation of ether or gas and oxygen. My practice is to employ ether, as this has a stimulating action on the blood pressure which in some cases shows a marked tendency to fall with avertin. The amount of supplemental ether required varies in individual cases and according to the type of operation. It is usually much less than that required for ordinary inhalation anæsthesia, and even for a lengthy operation no more than one ounce may be necessary. It is interesting that avertin tends to obliterate the corneal reflex, while leaving the pain and other sensations active, so that a patient who appears sufficiently deep in anæsthesia may respond to the irritation of the towel clips.

The anæsthesia of avertin has been aptly likened to the unconsciousness of deep sleep. It usually lasts for about two hours and may last much longer, the patient wakening naturally, though usually the sensations remain dulled well into the evening. There is usually no post-operative nausea or sickness. At the most this rarely troubles the patient more than once or twice, and quickly subsides.

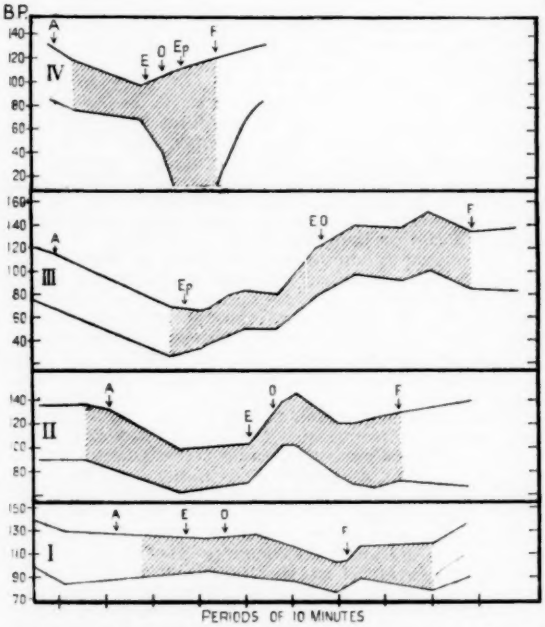

Chart showing blood pressure during operations conducted under avertin anæsthesia. A = completion of administration of avertin; E = start of administration of ether; O = commencement of operation; Ep = injection of 0·5 c.cm. ephedrine hydrochloride; F = end of operation, patient removed to bed. The upper line of each graph represents the systolic pressure, the lower the diastolic. The actual readings are given along the ordinates; the divisions on the abscissa are intervals of 10 minutes. The shaded portion represents the period during which the patient was under constant observation, while the unshaded portion to the left gives the pressure half to one hour before avertin administration, and that to the right the pressure about 10 o'clock next morning. The time relations of the unshaded portions are therefore not exact.

Notes on Cases.—CASE 1. Mrs. H., aged 38. Wt. 9 st. 6 lb. 5·9 c.cm. avertin, 4 oz. ether. Pelvic floor repair. No ephedrine given. CASE 2. Mrs. R., aged 42. Wt. 6 st. 3 lb. 3·9 c.cm. avertin, 3 oz. ether. Supravaginal hysterectomy. No ephedrine. CASE 3. Mrs. M., aged 45. Wt. 9 st. 13 lb. 6·1 c.cm. avertin, 2½ oz. ether. Pelvic floor repair. Half an hour after the exhibition of the avertin the systolic pressure had fallen 54 mm. and ½ c.cm. ephedrine was administered. CASE 4. Mrs. M., aged 39. Wt. 6 st. 1 lb. 3·8 c.cm. avertin, 1 oz. ether. Dilatation and curettage. The peculiar drop of the diastolic curve to the abscissa indicates that there was no cessation of sounds heard over the brachial artery, nor any qualitative change from a "third" to a "fourth" sound. A loud bruit was heard without any compression on the limb. This disappeared soon after the patient was returned to bed, and she did not show any signs of distress.

The dominating advantage of the drug is its lack of toxicity. It has apparently no damaging effect on the heart or liver. It has a depressing action on the respiration, which becomes slower, sometimes with stertor. Overdosage, it would seem, tends to paralyse the respiratory centre and several such cases have been recorded. I have had one case of marked cyanosis and a tendency to respiratory failure in a woman who was left unattended for some minutes after the administration. The condition may have been due to a mechanical blocking of the upper tract with the tongue, a risk especially to be looked for during the anæsthesia. In this instance the administration of carbonic acid gas quickly rallied the patient.

The Influence of Avertin on Blood Pressure.

In many instances avertin causes a lowering of the blood pressure. In our experience this has been more frequent and at times more pronounced than that appearing in the descriptions either in the manufacturers' brochure or the records of the other British investigators. Blomfield, for example, states that a drop of 10 to 15 mm. is to be expected, whilst Shipway records that in his experience the fall was about 15 mm., the maximum being 30 mm. Hg. The makers' brochure refers to the average fall as 20 to 40 mm. Hg. In my cases there has been a range of variation from nil to as much as 100 mm. Hg. In women with normal pressure I have on several occasions found a drop from 150 or 140 systolic to well under 100, and on one occasion there was a drop of the systolic pressure from 190 to 90, and in another from 180 to 90. These experiences are represented on the graphs (Figs. 1 to 4) prepared by Dr. W. P. Kennedy, of the Physiology Department of Edinburgh University, and may be dependent upon the fact that operative interference with the female genitalia has a special tendency to lower the systemic blood pressure. On this question further research is clearly required. In all of these cases the recovery of the pressure was satisfactory after the hypodermic administration of pitressin or ephedrine. In only one instance was the drop in pressure associated with any other alarming phenomena, and we are coming to regard the fall in blood pressure with increasing equanimity. The pulse tends to vary directly with the systolic pressure.

Analysis of Results.

I have used avertin in a total of 345 unselected hospital and private cases. There were 70 operations involving opening the abdomen, including hysterectomy 25 times, ovariotomy 6, salpingo-oöphorectomy 7, and appendicectomy 8 times. There were 48 operations for vaginal prolapse, and 2 for excision of the vulva for carcinoma. The remainder of the operations were, for the most part, minor operative procedures—e.g., dilatation and cauterisation of the cervix (57), curettage for exploratory purposes (29), radium insertion in cervical cancer (33), emptying the uterus in cases of abortion (6), and plastic operation for vesico-vaginal fistula (2).

There were two deaths, a mortality of 0·6 per cent. Our previous hospital mortality in 1799 successive cases, with ether alone or in combination with chloroform as the routine anæsthetic, was 34—that is, 1·9 per cent. The report of the Royal Samaritan Hospital for Women, Glasgow, for 1928 shows a mortality of 31 in 1836 gynæcological operations or 1·7 per cent. The details of the two fatal cases are as follows:—

CASE 1.—A para-8, aged 52, had a history of downbearing for 20 years, and of a protrusion from the vulva for five years. Retention of urine necessitating catheterisation had been present. There had been intermittent bleeding since the menopause five years previously. Suddenly, on August 29th, 1929, a large mass prolapsed from the vulvar opening, extending down as far as the knees. On admission the pulse-rate was 116. The tumour mass consisted of a markedly infected and sloughing fibroid tumour about the size of a fœtal head and, at the upper end, of an enlarged and inverted uterus and prolapsed vagina. On August 30th

the general condition was considered to be fairly satisfactory, and the fibroid was removed and the uterus reinvaginated from below. With the object of removing the damaged and infected uterus, supravaginal hysterectomy was carried out. The blood pressure was not recorded until the end of the operation at 11.30 A.M., when the patient was collapsed, and the pressure was 60/40 mm. Hg. Submammary saline and intravenous gum saline were administered while she was in the operating room. In spite of the usual cardiac stimulants and pitressin, she sank rapidly and died at 11 P.M.

CASE 2.—A para-4, aged 40, had a history of an abdominal swelling for one year, whilst for ten days there had been vomiting, acute pain in the right iliac fossa, and fever. At the operation on Oct. 2nd, 1929, the omentum and bowel were found to be densely adherent over a mass occupying the lower abdomen and pelvis, and during separation pus escaped. The anatomical outlines were obscure, the surmise being that we were dealing with an infected ovarian cyst. The mass was removed with difficulty, and the remaining cavity was packed with gauze. At the end of the operation the pulse-rate was 96, and the general condition was very satisfactory. During the day the pulse-rate rose steadily, and by evening was 160. She collapsed and died next day at 3 P.M., about 28 hours after the operation.

In neither case was an autopsy obtainable but we may, I think, conclude that in neither was the avertin the determining cause of the fatal issue. Neither showed the deepening coma and respiratory involvement that accompany the known toxic actions of the drug. In each case we were dealing with patients presenting a grave operative risk and in both we are faced with the futility of attempting after the event to determine how far a different method of treatment might have led to a more favourable conclusion. In each case, as it so happens, it would be as possible to argue in favour of some surgical procedure other than that actually selected as it would be to argue that different anæsthesia, for example gas and oxygen, might have improved the prognosis. My own conclusions, after a careful study of both cases, is that the avertin in neither can be definitely incriminated. The first case, however, raises the question of the appropriateness of this drug in a patient suffering from severe pre-operative shock.

Both cases belong to our early series and our subsequent experience, embracing as it has done a considerable number of similarly poor operative risks, with the discovery that a falling pressure can be controlled by ephedrine, has increasingly tended to the conviction that in eliminating the toxicity and the pulmonary complications attendant on ordinary inhalation anæsthesia we can now embark on severe operative procedures with an added confidence. In these respects my views coincide with those of others who have used avertin.

Reduction of Post-operative Sickness and its Risks.

Throughout there has been practically a complete absence of post-operative nausea and sickness, even in those cases in which as much as 8 to 10 ounces of ether has had to be administered during a lengthy operation. This seems to be explained by the narcosis, which is prolonged for some hours after the operation, allowing the elimination of the ether to occur whilst the centres are still in a dulled state. In no instance have there been such gastro-intestinal complications as acute dilatation of the stomach or paralytic ileus. This relative absence of post-operative sickness is one of the most important advantages of avertin, an advantage which it shares with spinal anæsthesia. It adds much to the patient's comfort during the early post-operative period and it is a fact of supreme importance in operations in the abdomen and on the pelvic floor, where trauma of the wounds due to straining may have serious effects. We have been especially impressed with the advantages of avertin in plastic operations on the pelvic floor, which constitute a relatively large proportion of our cases. It is known that these operations for prolapse are not devoid of risk, the special danger being hæmorrhage and sepsis. It may safely be presumed that the retching consequent on inhalation anæsthesia, by leading to a straining of stitches placed in wounds which often imply deep dissection in vascular areas, is an important cause of trauma and post-operative hæmorrhage and of the sepsis that may result. Further, an associated infection predisposes to the risk of tetanus, of which we have recently had some tragic examples in Edinburgh after pelvic repair operations for prolapse. I discarded ordinary inhalation anæsthesia some years ago in such operations in favour of spinal anæsthesia with stovaine. Latterly, with the advent of avertin, I have used this drug with the minimal amount of ether it requires. This combination is superior to spinal anæsthesia in that it eliminates both the pain and distress of the actual administration and the paresis of the bladder with the prolonged need for catheterisation that may follow on the latter method. I still retain spinal anæsthesia, however, as the routine procedure in Cæsarean section, because of the specific outstanding advantages it possesses of diminishing the bleeding from the uterine wound. This kind of natural hæmostasis seems to depend upon the removal of the inhibitory control of the central nervous system, allowing the sympathetic to exert its constrictor action on the muscle and vessels of the uterus. With its use Cæsarean section becomes a relatively bloodless operation; shock, a factor of supreme moment in many cases, is diminished; whilst the discarding of inhalation anæsthesia reduces the most potent danger in this operation—a danger especially great where sepsis is already present—namely, post-operative bronchitis and bronchopneumonia. During an experience of over four years with spinal anæsthesia in Cæsarean section I have had complete immunity from these pulmonary complications, and this result is especially significant in view of the fact that in a considerable number the operation was carried out in emergency and, therefore, potentially infected cases.

Altogether I have carried out 143 repair operations for vaginal prolapse with spinal anæsthesia, and 48 with avertin and ether—that is, a total of 191 cases without a death, and practically without pulmonary trouble, local hæmorrhage, or sepsis. There are few records showing the mortality risks of prolapse operations with other anæsthetics. Our own previous figures of 340 cases, with ether alone or combined with chloroform as the routine anæsthetic, show a mortality of 6, or 1·7 per cent. In three instances the cause of death was sepsis, in one tetanus, in one bronchitis, and in one heart failure. The Samaritan Hospital of Glasgow shows a total of 326 prolapse operations with six deaths—that is, a mortality of 1·8 per cent. during 1928. In two instances the deaths were caused by pneumonia, and in one each by acute dilatation of the stomach, septicæmia, pulmonary embolism, and hæmorrhage.

In a further effort to reduce the post-operative risks, I have for some time been carrying out additional precautionary measures. To reduce the risk of gastro-intestinal complications and of inhalation of septic matter into the lungs, an effort is made in every case to eliminate obvious focal sepsis in the teeth and tonsils and, in the case of pelvic repair operations, every patient receives a preliminary preventive inoculation of a stock streptococcus and *Bacillus coli* vaccine. By this vaccination I believe I have reduced the risk of cystitis and pyelitis, a risk which is especially present in cases in which prolonged catheterisation is required. The possible advantages accruing from these measures have, of course, to be placed beside those claimed for the anæsthetic procedures in any attempt to assess the benefits of the total operative routine.

Pulmonary Complications.

Our records, if we include the original series of prolapse operations carried out under spinal anæsthesia, comprise a total of 488 cases with two deaths—that is, a mortality of 0·4 per cent. There is no mortality from pulmonary complications, no bronchopneumonia or lobar pneumonia, and only a small unrecorded number of cases of mild bronchitis. One

patient developed a passing pleurisy several days after the operation. This is especially significant since a relatively considerable proportion of gynæcological patients consists of stout unhealthy women in late middle life. This especially applies to those suffering from prolapse, in whom immobilisation on the back naturally predisposes to pulmonary stasis and congestion. It is common knowledge that inhalation anæsthesia, especially with ether, is apt to determine pulmonary complications. There are, on the other hand, few satisfactory records on which the measure of these risks with differing anæsthesias can be judged. Fuller[3] has recently published an analysis of the operations carried out at University College Hospital during 1927 which shows 124 cases of lung complications in a total of 1478, or 8·5 per cent. The mortality from these causes was 26, or 1·8 per cent. In 1332 cases ether was employed with a 6·9 per cent. incidence of pulmonary trouble; in 204 chloroform was used with an incidence of 6·8 per cent., in 179 local and regional anæsthesia with an incidence of 3·9 per cent., and in 16 gas and oxygen with a rate of 6·2 per cent. Of the seven cases exhibiting lung troubles after local or regional anæsthesia, four had definite and two a suggestion of previous lung complaints, which clearly determined the choice of anæsthesia. Fuller's analysis shows that women are less apt to suffer than men, the respective incidences being 6·8 and 17·8 per cent. A further feature of interest is that the risk had no intimate relation to the length of the operation, but was signally dependent upon site. These figures bring out in a very startling way the risk of post-operative lung complications in surgery and, whilst they show that such factors as site of operation and sex are significant, they cannot but raise in a very acute form the question as to how far the choice of anæsthetic plays a dominating part. For an accurate verdict on this matter, however, it is essential to obtain large records of approximately similar classes of case in which different anæsthetics are employed. This becomes especially apparent when the greatly differing mortality from operations on different sites is noted. In Fuller's figures, for example, the mortality from pulmonary causes in upper abdominal operations was 3·3 per cent., and in lower abdominal operations 1·1 per cent., whilst in major operations on the mouth, pharynx, and larynx it was 23·1 per cent.

At the present moment our lack of knowledge tends to place us in the invidious position of refusing the services of one anæsthetic because of the dread of immediate disaster, when in reality by our choice we may inadvertently be multiplying many times the total risks to our patient. Only by an assessment of the total advantages and disadvantages, including the risk per 1000 cases, both immediate and from such subsequent causes as toxæmia and lung complications, inherent in each anæsthetic, can we hope to escape from the present unscientific position in which the choice of anæsthetic must often be largely a matter of personal bias on the part of operator or anæsthetist. Meanwhile I am satisfied that in avertin we possess a method which is unequalled for safeguarding the patient against the mental distress and physical discomfort commonly associated with anæsthesia, and that, at the same time, its administration in combination with a reduced ether inhalation, if carried out with care, is efficient and safe. Further, the comparative figures, although admittedly still limited in their scope, suggest that by means of avertin we are protecting the lives and promoting the recovery of our patients.

Conclusions.

1. Employed according to a method tested by experience, avertin is a safe anæsthetic.

2. From the point of view of the patient's sensations, both during induction and in the post-operative phase, it is greatly superior to inhalation methods.

3. With it, post-operative sickness and pulmonary complications are minimal.

4. The special dangers are those that arise from respiratory depression and lowering of the blood pressure. In this series these risks have not proved serious, and were outweighed by the great advantages gained in other respects.

5. In about 75 per cent. a greatly reduced inhalation anæsthesia with ether has been used to supplement the avertin, and with this the results have been satisfactory.

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2. Blomfield, J., and Shipway, F. E.: Ibid., 1929, i., 546.
3. Fuller, C. J.: Ibid., 1930, i., 115.

Clinical and Laboratory Notes.

A CASE OF INTUSSUSCEPTION IN ACUTE LYMPHATIC LEUKÆMIA.

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AND
M. M. POSEL, M.B., M.R.C.P.LOND.

As we have only been able to find one recorded case of intussusception in lymphatic leukæmia,[1] we think the following account may prove interesting.

The patient, a girl aged 4 years, was brought to the Bolingbroke Hospital on May 10th, 1929, complaining of colicky abdominal pain and constipation lasting for three days, accompanied by frequent vomiting during the last two days. The pain was chiefly centred about the umbilicus and upper abdomen. The temperature was 98·4° F., the pulse-rate 90, and the respiration-rate 20. The child was well developed and, in spite of a drawn, anxious expression, had a high colour in her cheeks. Her tongue was dirty but moist, and nothing unusual was found in the mouth, pharynx, heart, or lungs. The abdomen was slightly distended, particularly in the central part, and a vague mass was felt extending across the abdomen at about the level of the umbilicus. The mass was mobile and tender. Rectal examination was quite negative. A soap enema resulted in the passage of a large constipated stool, but the pain and vomiting continued and the mass remained.

A diagnosis of acute obstruction, possibly due to an unusual type of intussusception, was made and laparotomy was performed.

At the operation some clear straw-coloured fluid was found in the peritoneum and the mass proved to be an "enteric" intussusception, consisting of jejunum: the apex was to the right of the middle line and could be felt in the gut about nine inches from the neck. The intussusception reduced with ease to the last two inches and then only with great difficulty. The gut composing the apex appeared to be doubtfully viable, and moreover a small tumour about half an inch in diameter could be felt at the apex. This tumour, arising in the gut wall, felt firmly elastic and sessile. As it seemed likely to be a sarcoma, the gut was resected, its continuity being repaired by side-to-side anastomosis. The abdominal incision was closed without drainage. No splenic enlargement was noticed at the operation.

The patient, though in poor condition immediately after the operation, responded extremely well to ordinary anti-shock treatment. On the third day she had a good bowel action, and her abdomen caused no anxiety after the first 48 hours. It was noticed that, for so rosy-cheeked a child, she seemed to be strangely listless and apathetic, but in view of her excellent recovery from such a severe an operation we failed to associate this with the insidious onset of leukæmia. She was discharged 28 days after her admission, her wound soundly healed.

Dr. W. Newcomb kindly examined the resected gut and reported that the tumour consisted of partially infarcted small intestine with considerable extravasation of blood into all coats. The mucosal surface was secondarily infected

[1] West Lond. Med. Jour., 1920.

with numerous pyogenic organisms, and there was a considerable infiltration of leucocytes. Dr. Newcomb was of the opinion that the hæmorrhage was secondary to this, and he failed to find any evidence of leukæmia in the gut itself.

A fortnight later the child was readmitted complaining of pain in the right leg of two days' duration. Her parents reported that since her discharge she had been in poor health but without any definite symptoms, apart from listlessness; there had been no vomiting and the bowels had been well open and the stools normal in colour.

Her temperature was then 101·4° F., her pulse-rate 130, and her respiration-rate 40. She looked ill, was pale, listless, and uninterested in her surroundings. There were a few petechiæ over the left clavicle and on the left arm. The mucous membranes were pale. There was no bleeding from the gums, nor was the mouth ulcerated. The fundus oculi, heart, and lungs were normal, and nothing abnormal was found on clinical or skiagraphic examination of the right leg. The spleen was now easily palpable about two inches below the costal margin. The liver was not enlarged, and there was no palpable enlargement of the lymphatic glands anywhere.

An examination of the blood, for which we are indebted to Dr. A. Piney, revealed: 2,752,000 red corpuscles; 28,600 leucocytes; and 70,000 platelets; hæmoglobin percentage of 45; and a colour-index of 0·83. A differential count showed: neutrophile myelocytes, 9·9 per cent.; monocytes, 1·2 per cent.; lymphocytes, 86 per cent. (and of these 84 per cent. were small non-granular); lymphoblasts, 1·3 per cent.; premyelocytes, 0·6 per cent.; and Turk cells, 0·7 per cent.

The child was treated with deep X rays, but with no benefit, and she was taken home, where she died a few days later. No autopsy was possible.

Unfortunately, no cytological examination of her blood was performed at the onset of her illness, and therefore we have only presumptive evidence that she was suffering from leukæmia before the operation. But, judging from the analogy of the very occasional occurrence of intussusception in what are eventually established to be cases of Henoch's purpura, we believe that we are justified in recording this as a case of intussusception arising in acute lymphatic leukæmia.

We wish to thank Mr. V. Zachary Cope and Dr. Stanley Wyard for permission to publish this case.

FOUR CASES OF SONNE DYSENTERY.

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THE organism first isolated and described by Sonne [1] in 1915 has been widely recognised abroad. In 1924 Smith [2] reported its occurrence in Scotland, while two years later Frazer, Kinloch, and Smith [3] concluded that it was the most common cause of dysentery outbreaks in Aberdeen. It was not isolated in England until 1926 when Channon [4] described a case, and her case was atypical in not fermenting saccharose. Subsequently cases were reported by Clayton,[5] Evans,[6] and Clayton and Hunter,[7] and Nabarro [8] showed that *B. coli anaerogenes*, which he had frequently isolated at the Hospital for Sick Children, was identical culturally and serologically with *B. dysenteriæ* Sonne. Kerrin[9] in his review of the subject concluded that the organism was a serological entity, distinguished from the *dispar* group by the fact that it was indol negative and xylose negative.

The present account relates to a small outbreak of dysentery in the children's ward of the Westminster Hospital, in which *B. dysenteriæ* Sonne was isolated from the fæces in all four cases.

CASE 1.—A boy, aged 1¼, was admitted on Nov. 24th, 1929, with a history of diarrhœa of two days' duration. He came direct from an institution, of which he had been an inmate for the previous four weeks, and it has been found on inquiry that there were no other cases of diarrhœa there at the time, and none developed subsequently. His temperature on admission was 102·4° F., and he presented a picture of extreme dehydration with sunken fontanelles and scaphoid abdomen. His illness ran a severe course for six days with moderate fever and 7–8 daily stools containing blood and mucus, after which he made a rapid recovery. Treatment during the early stages consisted in the oral administration of half-normal saline. This case was undoubtedly the source of the outbreak, which involved the three other children within four days.

CASE 2, aged 1½, was convalescent after drainage of an appendix abscess, and developed fever (102·7°) and mild diarrhœa with blood and mucus in the stools on Nov. 26th. The acute stage lasted 48 hours, and recovery was rapid.—CASE 3, aged 1, a case of tonsillectomy, was discharged on Nov. 25th, and was readmitted the following day because of the onset of diarrhœa with the passage of fœtid stools containing blood and mucus. Temperature on admission was 101·4°, and the diarrhœa and fever lasted for four days.—CASE 4, aged 1¼, a case of pyelitis, had a rise of temperature to 100·4° on Nov. 28th, and during the night passed six stools containing blood and mucus. The temperature was normal on the following day, and there was no further diarrhœa. In all four cases fat was withheld from the diet during treatment.

The stools were sown on MacConkey plates, and in each case bluish-white colonies were isolated, which showed the following characteristics. In subculture the surface of the growth became rough. Mannite, glucose, and maltose were acidified in 24 hours. Gradual and persistent acidity occurred in litmus-milk. No indol formation could be demonstrated. The times taken to form acid in lactose and saccharose are given in Table I.:—

TABLE I.

Case.	Lactose.	Saccharose.
1	8th day.	Doubtful trace.
2	9th day.	10th day.
3	7th day.	11th day.

Emulsions of the organism in saline from agar slopes were agglutinated against the five Oxford Flexner sera, and also against the Oxford Sonne and polyvalent Flexner sera. The results are shown in Table II.:—

TABLE II.

Case.	V	W	X	Y	Z	Polyvalent (1/5 of full titre).	Sonne (full titre).
1	–	–	–	–	–	+	+
2	–	–	–	–	–	+	+
3	–	–	–	–	–	+	+
4	Not done.						+

The organism isolated from Case 4 died rapidly in subculture and provided material too scanty for agglutination purposes.

Dr. A. D. Gardner, of the Oxford Standards Laboratory, has very kindly repeated the examination of the organisms and confirmed my findings.

The points of interest in this outbreak are firstly the extreme rapidity with which a case of dysentery may light up infection in a ward in spite of the most rigid precautions, and secondly the mild nature of the symptoms, which appears to be the rule in infection with *B. dysenteriæ* Sonne. That a fatal result may ensue, however, is shown in the cases reported by Evans [6] and by Clayton and Hunter.[7] My thanks are due to Dr. Donald Paterson for permission to publish these cases, and to Dr. Braxton Hicks for his help and advice during their investigation.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

A MEETING of this Subsection on May 14th, with Mr. CECIL ROWNTREE in the chair, was devoted to a discussion on

RADIUM IN CARCINOMA OF RECTUM AND COLON.

Sir CHARLES GORDON-WATSON said that in 1927, in reporting to the subsection a series of 15 cases extending over less than three years, he had shown a woman, aged 37, whose fixed inoperable annular growth was treated by colostomy followed by perineal exposure and radiation with needles. This patient had gained much in weight, and was now in good health without any sign of recurrence. The case demonstrated that adenocarcinoma was not radio-resistant; also that when surgery was regarded as either hopeless or inadvisable, radium could, for the few, give a cure. But increased experience had shown that the percentage of failures in operable growths did not justify treatment with radium in preference to surgery, in the present state of knowledge, unless surgery was contra-indicated on general grounds, or unless the patient would not submit to colostomy and excision. Though he had treated over a hundred cases of carcinoma of the rectum with radium in five and a half years, he still felt that he required more experience before he could express definite opinions about the methods to be adopted or the likely results. But it would be useful to record some impressions.

A great stumbling-block was the difficulty of approach. If surgical access was easy, a good reason must be advanced for preferring radium to radical surgery. Some operable cases which seemed to offer good prospects had either responded and relapsed, or had failed to respond appreciably to radium, so that radical treatment by surgery was subsequently needed. How far preoperative radiation was a factor in preventing recurrence could not yet be stated. Dr. Cuthbert Dukes's recent work on the classification of rectal growths examined after excision had raised the question of the treatment of early operable growths. Dr. Dukes distinguished between the "A" case, in which there was as yet no infiltration of the muscular coat, the "B" case, in which infiltration had not passed beyond the muscular coat, and the "C" case, in which there was involvement of the perirectal tissues. His figures, based upon 100 cases, seemed to show that there was no danger of lymphatic spread in an "A" case or a "B" case, and therefore that local resection might be all that was needed to effect a radical cure. Dr. Dukes maintained that local resection might be accomplished, under the most favourable conditions, with restoration of function and without a serious stricture or a permanent colostomy. If, said Sir Charles, this could be established as surgically sound, considered from the point of view of risk of recurrences, it would be necessary to promise a high percentage of success with radium if radiation was to be given preference. At present this promise could not be given. Sometimes an operable growth which had been treated without colostomy retrogressed to a point, and then seemed to remain stationary owing to chronic sepsis.

Inoperable and Borderline Cases.

Individual standards of operability varied, but there was general agreement in defining the advanced inoperable case—i.e., the large, fixed, annular growth, which had infiltrated through the rectal wall in all directions. It was recognised that after colostomy—in the absence of liver metastasis—both the general and the local condition of the patient usually improved. If colostomy was followed by irradiation, it might not always be easy to say whether general and local improvement was the result of irradiation or colostomy or of both. Sir Charles's own experience showed, even in cases submitted to colostomy some months previously and to irradiation, that rapid and marked general improvement followed irradiation, even in the absence of any definite local changes. The outstanding problem was to secure adequate and uniform irradiation, and for this a combination of methods was sometimes necessary. If at the time of colostomy the growth extended above the perineal reflection, it was essential to treat this portion from the abdomen, either by radon seeds or radium needles. The glandular area in the mesorectum was treated at the same time. Very large and advanced growths should not be dealt with by the posterior open operation, owing to the risks of perforation and secondary sepsis. Often these cases were much relieved by perirectal and intrarectal attack. In several instances an operable or borderline case had been treated with radium with such improvement that radical excision could subsequently be done. Thus it seemed that borderline cases offered the most useful field for irradiation, either as a forerunner of excision or as affording some prospect of cure.

Dealing with abdominal irradiation, Sir Charles said he began treating high rectal growths with radium through the abdomen in January, 1928, and had now treated 26 cases by the abdominal route. The method was not without risk, and he had lost one case from peritonitis. Great care was needed to avoid puncture of the bowel, which was more likely with needles than with seeds. The first stage of the colostomy was carried out at the conclusion of the radiation. When he used radium needles within the abdomen he had them filtered with 0·8 mm. of platinum.

Recurrence after Radiation.

The speaker's experience was that recurrence was more likely after using radon seeds than after using needles, perhaps because the needles gave a more uniform intensity, though this defect in the seeds might be partly mitigated by adding more radon at short intervals. He had no doubt that primary irradiation increased radio-resistance to secondary applications, and improvement of technique was a necessary condition to further advance.

In young people rectal carcinoma grew rapidly, metastasis was early, and the end-results of surgery were not good. An actively growing carcinoma in a young subject responded well to radium, and far better than a slowly growing carcinoma in an elderly subject. If a growth was adequately barraged with radium and showed little evidence of retrogression after two months, it was probably useless to repeat the irradiation; but if the growth responded to radium and retrogressed, further irradiation could be carried out, on the ground that the first dose was probably insufficient. Secondary irradiation was less likely to produce a good final result than an adequate primary irradiation, and it was more likely to produce neuralgic pain, which might be lasting. The criteria of a correct dose were: absence of sepsis, a well-marked radium film, rapid resolution of growth, restoration of normal epithelium, and a limited fibrosis. Radium had its uses, also, in improving both the local and the general conditions of an inoperable case, so that operation then became feasible. The treatment of cancer of the rectum by radium was still in the nursery stage.

Sir Charles Gordon-Watson exhibited his cinematograph film showing the operative procedure.

Discussion.

Dr. A. LACASSAGNE (Paris) said that neither new nor old techniques of radiotherapy had brought about the cure of rectal cancer, and the removal of this disease still remained primarily surgical. During the last ten years 50 patients were treated for this condition by radiotherapy at the Radium Institute of Paris, but most of the cases were so advanced that extirpation was out of the question.

Some of them when they presented themselves at the Institute had already been treated by other means. With the help of surgery, two of the patients had remained free of their cancer for four and eight years respectively. His view was that the poor results obtained in rectal carcinoma from radium were due to the low radio-sensitivity of adeno-carcinoma of the rectum. The general conclusion of himself and his colleagues was that for malignant growths in this part of the body surgery remained the treatment, and hence radiotherapy was used only as a palliative in inoperable cases. The two favourite means of application were transcutaneous irradiation and telecurietherapy.

Mr. STANFORD CADE agreed that correct surgical excision of these growths gave the patient as good a chance of cure as could at present be hoped for. A similar statement was once made, however, in regard to buccal cancer; therefore, the attitude of the profession towards cancer of the rectum might conceivably be altered in a few years' time. In the selection of cases for irradiation the points which should influence the decision were: operability, the age and general condition of the patient, and the possibility of obviating colostomy. One difficulty was to avoid radium burns, for in order to irradiate strongly enough to bring about retrogression of the growth the strength had to be very near the toleration point of normal tissue. The growths needed pure gamma rays; when the multiple method was used beta rays were given off in the area. Filtration and screening were of the utmost importance. The intensity should vary with the nature of the cell concerned, with the presence or absence of mitosis, and its secretory activity. There was a threshold of intensity and one of time, and if these were not reached irradiation would be a failure. Uniform intensity could be gained by using the actual radium salt. Radium was the only means of treating cancer of the rectum which offered the possibility of avoiding colostomy, but for annular growths colostomy was unavoidable. Insertion of radium into the lumen of the bowel was the least satisfactory method of application; it could be no more than a palliative in otherwise unsuitable cases; it should then be supplemented by the inter-rectal interstitial method. Treatment by "bomb" irradiation was still under trial, and he did not think that generalisations could yet be made about it. Results should be classified as immediate and remote. In a small percentage of cases no obvious sign of disease remained three or four years after the use of radium; radium lessened hæmorrhage, pain, and discharge, and if metastases occurred, they did so later than if it had not been used. Of 700 inoperable cases treated in this way 150 survived and remained in good health for quite an appreciable time.

Mr. J. P. LOCKHART-MUMMERY remarked that the radium treatment of cancer of the rectum must still be looked upon as experimental. Many of the results had proved disappointing, though occasionally brilliant results were seen. Filtration should never be less than 0·8 mm. and it might be well sometimes to go to 1·0 mm. With less than 0·8 mm. there was too much necrosis of the tissue surrounding the needles. His experience was that small doses given for a long time gave better results than large doses for short periods, and ten days was a better period of application than seven days, other conditions being equal. The greatest difficulty at present was that of dosage. The milligramme-hour formula he regarded as useless; to be of service the formula should include the cubic capacity of the growth, but as there was no means of measuring this it was better to go on without a formula. His own suggestion for a formula was cubic capacity of growth, multiplied by the number of milligrammes of radium, multiplied by the number of hours. Access was not difficult when the growth was low down on the posterior wall of the rectum, but with growths on the anterior wall, or high up, there were great difficulties. In the case of anterior wall growths he separated the rectum from the prostate (in the male) and from the vagina (in the female), and placed lead foil covered with rubber tissue or other protective in front of the needles to prevent damage to bladder or urethra or the posterior vaginal wall. In women he preferred not to approach the growth through the posterior vaginal wall itself; it was better to dissect up the vaginal wall. For growths in the upper part of the rectum it was necessary to secure free general mobilisation. A large incision should be made, and the coccyx should be removed, and also, if necessary, a portion of the sacrum, the rectum also being mobilised as much as possible, so as to allow the needles to be accurately placed. He did not pack the wound, but closed it with threads inside it temporarily, and when the needles had been removed he drained freely in all parts. The lines of spread in the lymphatics could be treated at the same time. The greatest difficulty was experienced in irradiating the abdominal cavity. Here radon seeds were best, for needles placed in the abdominal cavity caused some peritonitis. He did not think preliminary colostomy was always necessary. One of the greatest difficulties was to deal with the wound after irradiation; the wounds presented a yellow "washleather" slough on the whole surface, and they were very indolent. Treatment with antiseptics was useless and was liable to cause hæmorrhages. They were best treated, he thought, with light packing with vaseline gauze, or gauze soaked with oil. Overdosage with radium was liable to cause excessive fibrous tissue formation, and many of the early failures were due to overdosage rather than to underdosage.

At present the best results were obtained in the early operable cases, in which radium was used because there was some contra-indication to resection. But he did not think that radium treatment for rectal cancer had yet given such good results as to justify its use as a substitute for operation, though it might be useful in conjunction with operation in allowing more local resections to be carried out. By using a combination of the two methods he had several times saved a patient from colostomy, and the results had been satisfactory. The best results he had seen had been in cases of epitheliomata; here the disappearance of the growth began any time after the first six weeks, and, in a good case, it was then rapid. The site of the growth became normal tissue and was smooth and soft, and there was no sign of there having been a growth. Radiation was particularly suitable in very old people who, usually, were not good subjects for surgery, and if the growth was detected fairly early colostomy would not be needed. Radium in the treatment of rectal cancer had definitely established itself as a means of getting rid of the growth in suitable cases, but at present its greatest use seemed to be as an auxiliary to surgery.

Mr. W. S. PERRIN said that many of his inoperable growths in this region were substantially relieved by radium. He preferred the needles put into the abdomen, but they could be put in from the outside through the skin round the anal margin. He referred to his use of radium in four operable cases. The first was in a man aged 63, whose growth was 4 cm. in diameter and was on the posterior rectal wall, a typical adenocarcinoma. He was given 6000 mg.-hours. The perineal wound healed in a month, and he was back at work in two months. He had been kept under observation 20 months, and remained well, except for a small lump, a piece of which was pronounced to be normal tissue. Another was a man aged 48, with a similar growth, and he had 6800 mg.-hours. Later he had two small sinuses which took four months in healing. Three small lumps remained, which Mr. Perrin tried to get rid of by means of radon seeds. On failing to do so he then resorted to diathermy. In neither of these men was colostomy performed. The third patient was a woman aged 60. Ten months ago he gave her 6800 mg.-hours irradiation, but the growth was unaffected. She remained in hospital two months,

then went to a convalescent home, but returned with the wound broken down and a perineal fistula, with the fæces discharging through the perineum; indeed in a lamentable condition. He did a colostomy upon her, and the wound was not yet healed. The fourth case was, like the third, operated upon ten months ago, and the patient was a woman, aged 56, with a larger growth. She was given 7600 mg.-hours, and she had severe pain. The perineal wound did not heal, and she had to have a colostomy. After that experience he did not feel justified in recommending radium for operable growths of the rectum if surgery was possible.

Mr. LIONEL NORBURY commented on the way in which apparently similar growths reacted differently in different patients. He exhibited a specimen from a case which had failed to react to radium, and the only reason he had gleaned for this was that the growth was very colloid, and so was radium-resistant. There was a great field in the direction of increasing the radio-sensitivity of growths. In deep X ray therapy effects were enhanced by painting the area with fluorescein, or giving that substance in capsules by the mouth.

Mr. E. T. C. MILLIGAN said radium offered a means of treatment with the hope of good results in carcinoma of the anal canal and anus. When radium burns followed treatment of rectal growths by this method, the conversion of the burn into a diathermy burn would abolish the pain and produce healing. He was indebted for this valuable advice to Dr. James, of America.

Dr. JAMES confirmed this last remark, and referred to several cases.

Mr. W. TURNER WARWICK said the majority of growths seemed to react better to a small dose used for a long time than a large dose used for a short time. In assessing the type of growth, he thought the layer involved and the type of tissue reaction should be taken into consideration. Until these matters were placed on a standard basis he did not think one could even begin to argue whether radium was suitable or unsuitable.

Dr. CUTHBERT DUKES pointed out that the classification which had been made of these growths into A, B, and C was from the point of view of prognosis, not as to how the radium should be given. It had been found that there were no lymphatic metastases until the growth had spread into the perirectal tissues. The grouping of these growths according to the type of malignant cell was of no use in rectal growths because they were always heavily infected by bacteria.

The PRESIDENT in closing the discussion referred to the great duty of the surgeon to fortify himself with all possible information so that he could best advise educated people about their particular case. These patients had an especial horror of colostomy, and would avail themselves of anything which would obviate it. Team-work would, it was hoped, succeed in bringing to a practical issue the important question of radio-sensitivity.

SECTION OF UROLOGY.

AT a meeting of this Section on May 22nd, with Mr. FRANK JEANS, the President, in the chair, a discussion took place on the

TECHNIQUE AND RESULTS OF PROSTATECTOMY.

Mr. KENNETH WALKER, in opening, said he had for some time been impressed with the differences in technique followed by surgeons in England in doing prostatectomy. The nearer one got to perfection the less was there likely to be variation in practice, and the fact that technique varied so greatly surely meant that perfection was still a long way off. He hoped speakers would lay stress on their failures and difficulties rather than on their triumphs.

The three major difficulties encountered in convalescence after this operation were hæmorrhage, sepsis, and perhaps post-prostatic obstruction. Hæmorrhage he regarded as the most serious of these. In earlier days when doing the Freyer operation he tried packing when oozing occurred, and there were many failures from it, one of the chief disadvantages being the necrosis and the unpleasant state of the bladder and urine when the packing was removed. Then for two years he employed bags, but he had several cases in which bags did not satisfactorily control the hæmorrhage; in many cases they did not exert uniform pressure on the prostatic cavity. When Sir John Thomson-Walker read his paper on the open method of prostatectomy, it was clear that it was a step in the right direction; it was an attempt to convert a blind method into one of precision and control under the eye. But, though the operation was often excellent, there were cases for which it was manifestly unsuited—at any rate in the speaker's experience—for the extra time required was dangerous or might be fatal. Some had prostates very low and difficult to expose, and for these he had given up the operation. From Australia had recently come an attempt at even greater precision, by Harris. Mr. Walker had not yet had enough experience of it to enable him to pass a final judgment on it, but he knew that with a sharp boomerang needle considerable hæmorrhage could be caused by putting into position lateral sutures for obliterating the canal.

The surgeon must vary his technique with the particular patient. Wherever he could Mr. Walker performed the open operation; and he did not spend a long time in trying to secure bleeding points deep in the prostatic cavity. If bleeding did not cease after placing the suture he packed lightly. Recently, in the cases not suited for the open operation, he had gone back to packing, because he found that with a tube and mercurochrome frequently instilled the severe sepsis could be got over. Hæmorrhage might occur three, five, or more days after removing the packing, apart from secondary hæmorrhage, so he now left the pack in for six or seven days. The chief disadvantage of that was that it increased the amount of painful spasm from which the patient suffered. He did not tie and leave in a catheter at the time of the operation, but he found a catheter was useful a little later in draining the rather septic bed of the prostate, and, still later, during the final stages of convalescence and the healing of the wound. He had had too many cases in which the bladder mucous membrane had become adherent to the scar, and so required secondary suture. He asked what was the reason for that.

Three Operations Compared.

Mr. SWIFT JOLY said that the cases he had dealt with at St. Peter's Hospital could be grouped under three main operations. The first was the old Freyer operation, of which he had had 198 cases, with 19 deaths (9·5 per cent.). Four of those deaths occurred the first day after the operation, and were due to a combination of shock and hæmorrhage. Next he began packing his cases, having special packs made of vaseline gauze soaked in acriflavine. This method was used in 159 cases, and among these he had had 14 deaths (8·8 per cent.). In this series none of the patients died immediately after the operation; one death occurred as soon as the packing was removed, but the other fatal cases were in the second or third week. The third operation, of which he had had considerable experience, was that of Thomson-Walker, and it had given him the best results of any. He had done this in 207 cases, and the deaths numbered 17 (8·4 per cent.). In changing from one operation to another he had experienced a gradually decreasing mortality. In the last series of cases the deaths were from the following causes: one from a possible pulmonary embolism on the ninth day; one from myocarditis 15 days after operation; one from influenza in the third week; four from pneumonia or broncho-pneumonia (two of these died during an epidemic of influenza in the ward and two from pyelonephritis). With the use

of the Thomson-Walker method the immediate deaths were wiped out; he attributed this result to more perfect hæmostatis and to the fact that cases were certainly less septic. With the use of the flavine pack the chief trouble was pain, and there was liability to hæmorrhage after removal of the pack. Hæmorrhage was more common in convalescence when packing was employed than when it was not. He would now be sorry to go back to any operation other than the Thomson-Walker, especially as the ensuing shock was practically negligible. A series of blood pressure examinations showed that when local anæsthesia was employed there was no fall of blood pressure during the preliminary incision and the cutting into the bladder, but there was a fall during the enucleation of the prostate, and the fall continued during the stitching up of the prostatic neck and carrying out the general toilet of the wound. Then the blood pressure rose again. After the Freyer operation nearly every patient had a permanent pyuria; but by means of a flavine pack one could get rid of that in a month. Now, after doing the Thomson-Walker operation, 20 per cent. to 30 per cent. of the patients had clear urine when they left the nursing home or hospital, and it was clear still a month after they left the hospital. And this was the only operation after which he had not had recurrence at the neck of the bladder after operation. He had tried, at one time, what was practically a Harris operation, but there was a bad secondary contraction afterwards. The flap he made lived, but the stitches cut out and the urethra separated from the bladder. In another case the flap became septic and sloughed away, and the patient was worse off than before. The prostatic bed was not an ideal site for doing a plastic operation. It was well known that in plastic surgery complete asepsis was a sine qua non, but that could not be obtained in this region after prostatectomy.

Technique and Management.

Mr. JOHN EVERIDGE said the preliminary treatment of the patient before doing prostatectomy was very important. A few days spent in hospital or nursing home before the operation was a great advantage; it enabled the patient to get accustomed to the surroundings and the diet and the regulation of the bowels. The mouth should be clean, and if defective teeth were present they should be removed before the operation if possible. The anæsthetic he preferred was light open ether with novocain infiltration of the rectus muscle. He liked stovaine for these cases. He regarded the Thomson-Walker operation as ideal. When it was properly done, post-operative obstruction was almost impossible. If that operation was not possible, he carried out a two-stage operation, the second one possibly having to be delayed as long as three weeks. After the Thomson-Walker operation post-operative hæmorrhage was to a large extent prevented, though in some cases there was oozing from the bottom of the cavity. For that he employed a light gauze packing. At one time he had avoided using a bag, since it might cause a disarrangement of the sutures; but he had now returned to it. Prolonged pressure with the bag meant a risk of sepsis. When a bag was not used, there were advantages in tying in a catheter for this made continuous or intermittent irrigation possible. Most of his deaths following this operation had been due, directly or indirectly, to hæmorrhage. A common post-operative complication was ileus. He put a small tube into the rectum in these cases at the end of the operation to facilitate escape of flatus; furthermore, nourishment could be introduced into the rectum through the tube. In 150 cases he had eight deaths, due directly or indirectly to hæmorrhage. In most of these the patient was being looked after by someone else at a distance away, and perhaps more expert care might have prevented some of the deaths. In two death occurred within 36 hours of the operation; hæmorrhage had been going on all the time. Two deaths occurred from hæmorrhage when the gauze packing was removed; in four the hæmorrhage came on at about the sixteenth day after operation, when the wound was almost healed. In four primary shock killed the patients. One death was from pneumonia, and one (on the fourth day) from embolus. In that series his mortality was 10·7 per cent. After the one-stage operation his deaths were 9·7 per cent., and after the two-stage 12·3 per cent.; but the latter was chosen in the worst cases—i.e., those with a higher mortality risk.

Mr. CLIFFORD MORSON said he was a supporter of the open method of suprabubic prostatectomy, not only for adenoma or simple enlargement of the prostate, but also for carcinoma. His technique was similar to that introduced by Sir John Thomson-Walker, except that he did not tie in a catheter at the time of the operation. The catheter, he considered, added to the patient's discomfort; it did not drain well, and served no useful purpose if a posterior flap of mucous membrane had been successfully dealt with. As regards immediate results, Freyer's operation gave mortality rates so low that they had never been surpassed. But prostatic obstruction occurred afterwards too frequently, and the Thomson-Walker technique had eliminated that. Rapidity of operation was very important. Hæmorrhage did not cause shock, but rough handling of the tissues did. The danger of infection of the seminal vesicles had not yet been eliminated; it was caused by fracture of the ejaculatory ducts at the time of the enucleation. Within a short time these ducts were sealed up and the seminal vesicles then presented perfect culture tubes. To excise these vesicles at the operation unjustifiably increased the severity of the procedure. To prevent orchitis he had for nine years been isolating and dividing both vasa; he had been able to promise his patients they would never have orchitis. In the last 128 cases of prostatectomy carried out by him at St. Peter's Hospital—excluding private cases—26 were complicated—e.g., by stone, stricture, or diverticulum. The remaining 102 included cases of pre-operative retention and uræmia. Of the 26 with stone, &c., two died, giving a mortality of 7·69 per cent. Among the other 102, seven died (6·8 per cent). These 128 patients were in hospital for an average of 28·5 days.

The Thomson-Walker Operation.

Sir JOHN THOMSON-WALKER said that the operation he advocated consisted of a long incision, and enucleation with the fingers, after the Freyer method, the placing of the patient in the Trendelenburg position, exposure of the base of the bladder, removal of nodules and tags, and enlargement of the opening from the bladder into the prostatic cavity, followed by control of the hæmorrhage, either by a continuous suture or by a suture round each vessel which was seen to be bleeding. If this did not stop the bleeding he did not prolong the operation by looking for bleeding points, but packed round the catheter which he had drawn into the bladder. After that it was important to prevent pelvic cellulitis. He always retained a catheter to aid washing out, not for drainage at this stage; more and more he did continuous irrigation, and that was easy with a retained catheter and with bags. Bags were very useful in after-treatment; boric crystals were placed in the box, and when the urine trickled down it formed with the crystals a boric lotion, thus producing an antiseptic atmosphere round the end of the catheter, and he also dressed the penis. He had a preference for constant irrigation with very weak nitrate of silver solution, and that could be carried on three or four days after the operation.

The objects of his operation were to prevent sepsis, to control hæmorrhage, and to prevent obstruction, and he thought it went far to prevent those three grave complications. During the last six years his private patients had passed urine on the eleventh day after the operation, on the average, and the wound was dry on the sixteenth day. He agreed that not

all cases could be treated by this method; there was no operation in surgery into which every case could be fitted. In cases of severe infection of bladder and kidneys it was necessary to drain the bladder by suprapubic cystotomy. When secondary prostatectomy had to be done he used the Freyer method. In very old and feeble patients, or those with serious complications, such as bronchitis, his object was to get through the operation as quickly as possible; placing the patient in the Trendelenburg posture might be too severe, and he did the operation by the closed method. In the 11 years 1919–29 he had done 472 prostatectomies for simple enlargement, and his mortality was 5·2 per cent. He thought that the mortality figures in private cases were better than in hospital cases because the patients were treated in separate and cosy rooms, and were attended by expert nurses and the surgeon. This expert attention was also given in St. Peter's Hospital. It was not necessary to retain the packing longer than 48 hours. If, on removing it, bleeding occurred, the pack should be replaced. He agreed about the danger of ileus as a complication, but thought it was due to toxæmia.

Further Discussion.

Mr. G. E. NELIGAN said he did not encourage his patients to pass urine within three weeks, especially as healing took quite that time, and urine was an irritant fluid. His mortality in 100 cases was 5 per cent. Secondary hæmorrhage took place in two cases, and each of those started passing urine before three weeks. The hæmorrhage was controlled by a Pilcher's bag, and one of the patients had incontinence afterwards. In three cases there was inflammation of the vas, but it did not go as far as the testicle, for he had cut the cords. Four had pulmonary embolus, of which one case was fatal, and four were found on section to have carcinoma in the adenoma.

Mr. H. P. WINSBURY WHITE remarked that until the urological surgeon had gained considerable experience he would be wise to do the two-stage operation.

Mr. JOCELYN SWAN agreed about the importance of making a long incision, to permit the surgeon to see everything; he also attached great importance to anchoring the prostate before dealing with it. Pilcher's bag he had found of great use; he put it in after the operation and anchored it to the right thigh, and then put two tubes into the bladder—one large, one small. He always drained the prevesical space with corrugated rubber. He expected his wound to be healed in 17 days. He did not hesitate to insert a catheter and use it for drainage.

Mr. CYRIL NITCH said that in 100 cases he did the one-stage operation in 41, with 9 per cent. mortality, and the two-stage operation in 59 with a 10 per cent. mortality. In his 100 cases secondary hæmorrhage occurred in seven, and epididymitis in eight.

The discussion was continued by Mr. S. G. MACDONALD, Mr. J. B. MACALPINE, Mr. E. W. RICHES, Mr. E. T. C. MILLIGAN, Mr. HOPE CARLTON, Mr. HAROLD DODD, and the PRESIDENT. Mr. KENNETH WALKER replied.

HOSPITAL ACCOMMODATION AT WORCESTER.—An official report has been issued of a conference upon the hospital accommodation of the city of Worcester between representatives of the corporation, medical men, and Worcester General Infirmary. Dr. A. J. B. Griffin, the city medical officer, pointed out that the existing services were unable to meet the medical and surgical needs of the citizens, and suggested that the pressure might partly be met by using the Shrub Hill Infirmary, formerly the workhouse infirmary, which would involve an improved nursing and an augmented medical staff. The conference decided in that sense, and the details will be settled later. Meanwhile the public assistance committee has had the word "Workhouse" chipped from the stone tablet on the front, and the words "Municipal Homes" substituted.

Reviews and Notices of Books.

HEREDITY IN MAN.

By R. R. GATES. London: Constable and Co. 1929. With 87 illustrations. Pp. 385. 24*s*.

THIS is in effect a completely revised and much enlarged edition of the author's "Heredity and Eugenics" published in 1923; the section on twins and the inheritance of twinning is omitted and we are promised a full treatment of the topic in the next edition. After a general account of the theory of Mendelian inheritance, there follow chapters on stature, hair and eye colour, and blood groups, and nine chapters on various diseases and defects; acholuric jaundice is quaintly placed among "metabolic defects" instead of in "diseases of the blood system." We then have a chapter on the inheritance of mental differences and finally, the longest and to many people the most interesting, on racial crossing. The whole is an extraordinary mine of information, and Prof. Gates has succeeded as well as could be expected in writing up a catalogue as a readable tale. The book is written quite frankly from the Mendelian point of view, and Prof. Gates has little to say of the mass studies of statistical biometry, though we should have thought that, at the lowest valuation, these had contributed something substantial to our knowledge of the inheritance of stature and of length of life; the latter incidentally appears to be nowhere mentioned, though we are told on fair authority that it is one of the best proved examples of an intensely heritable quality in man. Prof. Gates's outlook doubtless reflects his considered opinion of the constitution of living organisms, that they are made up of discrete heritable units. But it also has a definite and very useful object—to persuade those who make observations on human inheritance that they cannot possibly neglect the Mendelian point of view and must in observing and recording constantly bear in mind the possibility of alternative inheritance and segregation. At the end of the book he gives some striking examples of the segregation of racial characteristics in human hybrids. He accepts the main races of mankind as good species in the ordinary zoological sense, and points out on the one hand how man's wandering habits have led to a great deal of racial mixture and on the other how his liking for stopping at home has resulted in stabilisation and apparent purity. He marshals much evidence to show that the crossing of widely divergent human races produces on the whole an inferior progeny liable to various disharmonies, and it seems evident that if all mankind is to be mixed up into one hybrid race the process should proceed by gradual steps rather than by the direct union of nordic with negro. Such are some of the subjects which are discussed, and we heartily commend the book to all who are interested in human beings. The investigation of human inheritance is difficult and slow, but a great deal of progress has been made in recent years, and it is more certain than ever that it will soon be one of the most important parts of preventive medicine.

MALE DISORDERS OF SEX.

By KENNETH M. WALKER, F.R.C.S., late Hunterian Professor, Royal College of Surgeons of England; Lecturer in Venereal Diseases, St. Bartholomew's Hospital; Surgeon in charge of Genito-Urinary Cases, Royal Northern Hospital, and St. Paul's. London: Jonathan Cape. 1930. Pp. 191. 5*s*.

THIS book on sexual disorders is written for the general practitioner, not from the standpoint of a psychologist, but from that of a genito-urinary surgeon who calls psychology to his aid whenever he

considers it necessary. The general scope of the work will readily be grasped from an enumeration of the headings of the main chapters, which deal with such subjects as impotence, prevention and relation to marriage, homosexuality, masturbation, continence, and sterility. Mr. Kenneth Walker has approached these subjects with a knowledge of their deep importance from the psychological as well as the physiological standpoint, and has maintained a just balance between the conflicting fields of suggestion, medical treatment, and surgical interference. He discusses the controversial points involved with an admirably balanced judgment, which is particularly valuable in the section dealing with Voronoff, Steinach, and the claims of organotherapy in impotence. The chapter dealing with continence is sane and helpful. So much intemperate writing has circulated round this that Mr. Walker's sensible views are refreshing. Another important section is that dealing with sterility in the male, its detection and treatment. This is a subject which is attracting more attention than formerly, the comfortable old view that sterility was practically always the fault of the woman having been proved inaccurate.

It must have been difficult for the author to compress so much material into the space allotted him, and indeed in some places the text shows signs of excision. We should have liked to have seen the name of Acton, the British pioneer in this subject, mentioned somewhere in the text, and for a bibliography, however brief, we should have been grateful. But, apart from these mild criticisms, we have nothing but praise for the book. It is a practical work which should be in the hands of every practitioner.

TUBERCULOSIS.

The Modern Surgical Treatment of Pulmonary Tuberculosis. By BERNARD HUDSON, M.D. Cantab., M.R.C.P. Lond., Medical Superintendent, Victoria Sanatorium, Davos-Platz, Switzerland. London: Jonathan Cape. 1930. Pp. 128. 5*s*.

OPERATIVE procedures in the treatment of pulmonary tuberculosis have shown striking advances under modern technique and Dr. Hudson deserves congratulation for an excellent summary of the present position. The limitations as well as the advantages of each procedure are discussed impartially and the views expressed are mostly those of the author himself, based on his considerable experience as a physician at Davos and Montana. The first half of the book is devoted to artificial pneumothorax, the indications and contra-indications are mentioned, and methods of dealing with various complications are described. Of special interest is an account of Dr. Maurer's method of cauterising pleural adhesions. The value of oleothorax in maintaining the collapse of the lung is indicated. Thoracoplasty is a more serious procedure but in skilled hands is now far less dangerous than it was a few years ago. It should not be advised unless the patient has fair resistance, as indicated by the presence of fibrous tissue. A preliminary phrenecectomy is usually performed. The possibilities of plombage or pneumolysis are also discussed, but this, like the old operation of external cavity drainage, has largely fallen into disuse.

The book is well written and contains a great deal of information in a small space.

HANDBOOK ON TUBERCULOSIS.

By B. S. KANGA, M.D., D.P.H., Medical Officer, Turner Dispensary and Visiting Medical Officer, Turner Sanatorium, Bombay. London: John Bale, Sons and Danielsson, Ltd. 1930. Pp. 150. 5*s*.

THIS little volume has been written to place before medical students and practitioners in India a summary of modern views on tuberculosis. The author has included all forms of tuberculosis, separate chapters being devoted to disease of the bones, joints, eye, ear, and other systems. It follows therefore that only the briefest space could be given to each subject and that much matter of the first importance has had to be omitted. Some of the views expressed are not now accepted by most authorities, but in most doubtful questions alternative opinions are given.

PHYSIOLOGY OF ORAL HYGIENE AND RECENT RESEARCH.

Second edition. By J. SIM WALLACE, D.Sc., M.D., L.D.S., Lecturer on Preventive Dentistry, King's College Hospital. London: Baillière, Tindall and Cox. 1929. Pp. 228. 10*s*. 6*d*.

THE second edition of this book has been enlarged considerably by the addition of various lectures and contributions to discussions. That part of the book which appeared in the first edition in 1923 has, however, been reprinted in extenso, without revision, with the result that certain statements about vitamins which represented views then have now become out of date. Dr. Sim Wallace's views have become almost classical. The reiteration of his teaching has doubtless been an important factor in gaining some measure of acceptance for it, though it has deprived this volume of any fresh appeal. The persuasiveness which characterised his earlier books is lacking and the sober, reasoned criticism which he used to apply to other theories of dental caries is replaced by a more carping attitude. Is there really such antagonism between Dr. Sim Wallace's views and those which are based on animal experiments with diets varied in their vitamin content? Granted that the immediate cause of dental caries is the fermentation of carbohydrate foodstuffs in contact with the teeth would it necessarily follow that the structure of the teeth is unimportant? While there is much clinical evidence to support Dr. Sim Wallace's theory that the sticky quality of the food promotes caries, yet every dentist is familiar with cases in which the quality of the food fails to explain a susceptibility to caries. Equally, every dentist sees cases in which the principles of prevention, as laid down by Dr. Sim Wallace, are flagrantly violated and yet there is an immunity to dental caries. On clinical grounds it appears to us difficult not to believe that the structure of the teeth is intimately bound up with the question of susceptibility and immunity to dental caries. The experimental work of Prof. and Mrs. Mellanby strengthens this belief, but even if this work had never been done, there would be abundant reason to think that defective structure was an important predisposing factor in the production of caries.

CORONARY THROMBOSIS:

Its Various Clinical Features. By SAMUEL A. LEVINE, Senior Associate in Medicine, Peter Bent Brigham Hospital, Boston, Mass. London: Baillière, Tindall and Cox. 1929. Pp. 178. 13*s*. 6*d*.

THIS book brings under one cover the information contained in the literature on coronary thrombosis, a condition which till comparatively recently was not generally recognised as a clinical entity. In addition to reviewing the ætiology and the various clinical features, including electrocardiographic changes, the events of an acute attack are described and atypical forms and complications are considered together with differential diagnosis. The question of treatment is discussed in more detail than in any previous publication known to us, several points of particular interest being introduced. It is suggested that in the event of extreme pain, where morphia has

failed to secure relief, light ether anæsthesia may be used; in this country some practitioners might hesitate to adopt this humane suggestion for fear that, should death occur, a coroner's court might find that it had been accelerated by the anæsthetic. Dr. Levine notes that oxygen is of definite value in cases with gross œdema and cyanosis. Stimulation of the heart in the early stages is considered inadvisable; the sluggish contractions are to be looked on as a safety mechanism and for this same reason digitalis should be withheld at the early stages of the illness. Among the complications demanding special treatment the author mentions ventricular tachycardia, the onset of which can, he considers, be diagnosed in some cases without an electrocardiographic record; quinidine is the drug to use in this emergency which, if untreated, will probably prove fatal. A very complete description of the morbid anatomy of coronary thrombosis is given by Dr. Levine, and a large section is devoted to a series of case reports. In his historical survey Dr. Levine notes that we are indebted to the careful observations of practising clinicians rather than to the work of experimental investigators for our knowledge of this disease.

MEDICINE AND THE LAW.

Workmen's Compensation: the Certifying Surgeon's Certificate.

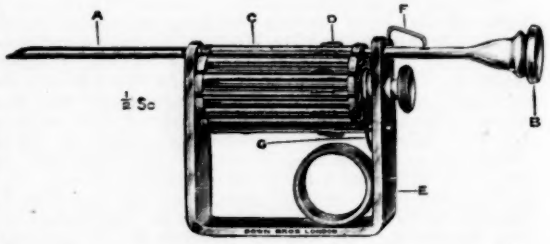
MINER'S nystagmus, as is well known, is one of the diseases which, ever since 1907, has been included in the third schedule of the Workmen's Compensation Act. Disablement due to this disease is, by virtue of Section 43, equivalent to personal injury by accident arising out of and in the course of employment; compensation is recoverable from the employer who last employed the man during the 12 months in the employment to the nature of which the disease was due. The Section further provides that the date of disablement is to be such date as the certifying surgeon certifies as the date on which the disablement commenced or, if he is unable to certify such a date, the date on which the certificate is given. There has been doubt whether the certifying surgeon's certificate of the date of disablement was conclusive. This doubt has now been resolved by the highest judicial tribunal in a Scottish case (Wilson's and Clyde Coal Co. *v.* Flynn, reported in the *Times* of May 21st) in the following circumstances.

In 1925 a miner was disabled by miner's nystagmus and, after a period of total incapacity, was paid £70 in discharge of his claim. In February, 1927, he was employed underground, and in the following November he was again disabled from the same cause and, after a period of total incapacity, was again paid £70 in discharge of his claim. From that point he was unemployed until on Feb. 14th, 1929, he went to work for the appellants as an underground miner. The arbitrator, from whose findings the above facts are taken, found that on the last-mentioned date the man was still suffering from miner's nystagmus and had not recovered from his previous disablement. After working for two hours the miner complained of headache, left the pit, and did not return. Four days later the district certifying surgeon certified him to be suffering from the disease and to be thereby disabled from earning full wages in that employment; the certificate stated that disablement began on Feb. 15th. An appeal to the medical referee was dismissed. The arbitrator refused compensation, holding that when the miner entered the appellant company's employment in 1929 he was suffering from the nystagmus contracted before November, 1927, and that thus his disablement in 1929 was not due to his employment by the appellants during the statutory period of 12 months before the 1929 disablement. This finding raised the question whether the arbitrator could go behind the certifying surgeon's certificate and say that the date of disablement was some date different from the date in the certificate. The Court of Session in Edinburgh by a majority decision declared that on the interpretation of the Act the certifying surgeon's certificate is final and conclusive. The House of Lords says that this view is correct. The result has been represented as likely to cause the employers to suffer hardship, if not indeed injustice. The certifying surgeon is not exactly a judicial authority. He does not hear the parties. He gives the employers no chance of listening to the case which the workman puts before the surgeon or of adducing evidence on their own behalf. This is hardly consonant with natural justice. Nor are the immediate employers the only persons interested; there may be a liability on earlier employers for whom the workman has worked in the past 12 months. However, as usual, the judges are not concerned with what Parliament ought to have said but with what Parliament did say. Unfortunately, what Parliament said seems liable to lead, as in the present case, to an inequitable conclusion.

New Inventions.

AN IMPROVED RADIUM NEEDLE INTRODUCER.

THE instrument consists of a hollow trocar A, with a bevelled needle point. The trocar is slotted on its upper surface, and in it passes the stilette B. C is a revolving cylinder which measures 1¾ in. in length, and contains 12 chambers each slotted on their outer surface. These chambers are for the reception of the radium needles. Each chamber is loaded with a threaded needle before use, and the threads are



drawn out of the slots on the outer surface, and pass beneath the small metal flange D which anchors them until they are required. E is the handle by which the instrument is held. The trocar is first introduced into the tissues with the stilette in position. When the required depth has been reached the stilette B is withdrawn. The catch F is a restraining catch and prevents it being drawn out completely. The cylinder is then rotated until the first chamber comes into line with the trocar. This point is automatically regulated by a ball catch. G, the stilette, is then pushed home, and the threaded needle is forced through the trocar into the tissues, the thread lying in turn in the slot on the upper surface of the chamber, and then in that of the trocar. The stilette is then withdrawn, the cylinder again turned until the next chamber is engaged, and a second needle introduced. Or the trocar may first be withdrawn and reintroduced at a fresh spot. The instrument saves much time.

Messrs. Down Bros., St. Thomas's-street, London, S.E., are the makers.

RALPH BROOKE, M.S., F.R.C.S.

THE LANCET.

LONDON: SATURDAY, MAY 31, 1930.

THE EVANS CANCER CURE.

IT is lamentable that the jury failed to agree in the action brought by Mrs. AMELIA BURRELL against Mr. DAVID REES EVANS, an unqualified medical practitioner and the proprietor of an alleged formula for the cure of cancer. Mrs. BURRELL'S case was that the defendant promised to cure her permanently in three months by herbal treatment. She charged him not only with negligence but also with fraud. The grave feature of the case was that, before the defendant's treatment began, Mrs. BURRELL was in an operable condition, but, after three months' treatment, she was inoperable and incurable. After several days' trial Mr. Justice CHARLES left three questions to the jury: (1) Did the defendant make fraudulent misrepresentations to induce, and did he induce, the plaintiff to enter into a contract to be treated by him? (2) Did he warrant to cure her permanently in three months and was the warranty broken? (3) Was he negligent in his treatment of her? After being absent from court for three hours the jury said they could not agree on the first and third questions; as to the second question, they considered Mr. EVANS did not warrant to cure Mrs. BURRELL in three months. Describing this inconclusive result as extraordinarily unfortunate, the judge had no alternative but to discharge the jury. The plaintiff, of course, is free to recommence her action before another jury. A subsequent application on Mr. EVANS'S behalf for judgment on the issue of contract was refused, the costs of the application being awarded to Mrs. BURRELL.

Regrettable as is the waste of time and money which the requirement of unanimity among jurymen occasionally imposes, the action has brought to light facts of wide interest. We now know from Mr. EVANS himself that his formula for the cure of cancer was accidentally discovered by his father (a farmer) and his uncle who, after experimenting with various remedies, successfully cured their brother of cancer of the lip. In his early days, the plaintiff tells us, he helped his father and uncle who dealt at Cardigan with 200 patients a day, working from 9 A.M. till midnight and only breaking off for tea. We know that Mr. EVANS has four formulæ in all: one of them he uses for curing duodenal ulcer, an ailment which, he explained to the judge, is of the same family as cancer. We know that he was educated at the Cardigan County School and not at any university or hospital, even though the literature which he circulates may suggest the contrary. We know that the testimonials which he publishes are not spontaneous and that his booklet, entitled the Cardigan Cancer Cure, can be judicially described as "sodden with misstatements." Suggestions were made during the trial that the orthodox medical practitioners were jealous of the success of the Evans cure and declined to put it to the test. On the other hand, Prof. LAZARUS-BARLOW, for over twenty years director of cancer research at the Middlesex Hospital and a member of the Cancer Committee of the Ministry of Health, gave evidence that Mr. EVANS had (after questions had been asked in Parliament about his cancer cure) been invited to appear before the committee. He came and brought with him printed and written documents, sworn statements, and photographs of cases which he wished to submit to the committee for investigation. The committee communicated with medical officers of health in the towns where the alleged cured patients resided, asking for information about the cases. In the majority of instances the patients were dead or had disappeared. In only two or three cases could the medical officers get definite evidence, and there was nothing to lead them to suspect that the suggested cure had ever taken place. The committee reported that they had not found sufficient evidence to carry the matter further.

Part of the publicity which the Cardigan Cancer Cure has enjoyed has been due to an article in *Light* by Mr. HANNEN SWAFFER who, in the evidence he gave for the defendant, described himself as a very well-known investigator of facts. We do not know the jury's opinion of this article but we know what the judge thought of it. "How any responsible journalist could write such wicked, misleading nonsense dealing with so terrible a thing as cancer," said Mr. Justice CHARLES, "I cannot conceive. I asked him 'do you know anything about cancer or how to recognise cancer?' and he replied 'I know nothing.' Yet he deliberately told the public that the defendant showed him photographs of malignant growths and cancers in bottles; I daresay the defendant did nothing of the kind." The evidence in the case, and the jury's inability to come to a decision upon the merits of the Evans treatment seem to show that there are many people who so trustfully believe in the magic of a secret and miraculous cure that they prefer the ministrations of an unqualified practitioner to all the known developments of medicine and surgery. Even their credulity is taxed when Mr. SWAFFER'S article tells them that "Little is done in hospitals except to perform operations which only delay inevitable death." Mr. EVANS himself, it may be, viewed the prospects of the recent litigation with anxiety. At any rate he transferred his money into his wife's name a month after the issue of the statement of claim. Nevertheless he can claim that the jury accepted his statement that he did not warrant to cure Mrs. BURRELL permanently in three months. Simultaneously with these civil proceedings in London in Mrs. BURRELL'S claim for damages, a herbalist named JAMES MASSEY was being tried at Manchester Assizes on a criminal charge of manslaughter. The prosecution called evidence to show that the accused, an unqualified practitioner, had treated a woman for some months and by criminal neglect and ignorance had aggravated her cancer; if properly treated, she would probably have recovered. He was found guilty and was sentenced to 15 months' imprisonment.

PUERPERAL SEPSIS.

IN the middle of the eighteenth century CHARLES WHITE, the father of modern midwifery, conducted his practice in the poorest parts of Manchester for 25 years without losing a single case from puerperal fever. ROBERT COLLINS stated in 1835 that he did not have a single death which he attributed to this cause among 10,785 deliveries in the last four years of his Mastership of the Rotunda Hospital. On the other hand, WHITE said, "It is evident that by much the greater part of the sex will do well even under the worst treatment," and it is this problem which is so baffling. Why is it that a slight slip in technique will kill one patient, while others will recover without any symptoms after "the

worst of treatment"? Some have tried to blame late coitus but without any serious evidence. W. W. KING [1] has recently maintained the thesis that hæmolytic streptococci can be conveyed to the genital tract of a parturient woman by "spraying" from the throat of an attendant, but the fact that such streptococci have been found in the throats of a high percentage of nurses makes it seem improbable that this suggestion is of much clinical significance, though it is evidently important that attendants with sore-throats should be prohibited from attendance in the labour ward. To explain the peculiarities of incidence we are driven to make use of an abstract conception—the resistance of the patient. No one seriously believes that autogenous infection is responsible for many cases of puerperal infection, but it is obvious, for instance, that an anæmic woman is less able to resist any form of infection than one who is healthy and well. H. BURT-WHITE [2] appears to have been the first to investigate the relation of the Dick test to the incidence of puerperal sepsis, and this seems, on the face of it, a promising line of investigation. A fortnight ago, however, LOIS STENT showed in our own columns, from a series of 500 cases, that immunity to streptococcal toxin measured by the Dick test did not decrease the liability to a morbid puerperium. Another suggestive inquiry has been that of H. N. GREEN and E. MELLANBY working on the theory that vitamin A is valuable in protecting the body against infection. They have tried the effect of large doses of this vitamin for cases of established septicæmia, and though they have not yet proved it effective at this stage there is little doubt that diet is one of the most important factors on which the resistance of the body to infection depends. In treatment, however, there is as yet no accepted remedy. Anti-streptococcal serum is held to be a useful prophylactic if given in large doses, but it has proved disappointing after the onset of frank septicæmia. Local treatment, such as REMINGTON HOBBS's method of treating the uterus with glycerin, may be of service in selected cases, but certainly cannot be recommended for indiscriminate use; for almost every authority agrees that the less interference there is with the uterus, the better will be the patient's chances. It seems doubtful if the treatment suggested by CHARLES WHITE can be much improved upon at the present day.

It is barely 200 years since the first maternity hospital was opened. The results obtained a century ago by such men as L. J. BOER and COLLINS were extremely good, but the principles on which they based their practice were forgotten, and by 1870 the mortality from puerperal sepsis in all the maternity hospitals of Europe was so terrible that a general agitation in the lay press all but caused them to be closed. MATTHEWS DUNCAN wrote: "The mortality of maternity hospitals is said to be so great that it is expedient, indeed absolutely necessary, to close them entirely." All that he could say in their favour was that their record of mortality was nearly the same as that outside their walls, and he admitted that he knew of one hospital that lost over 30 per cent. of its patients. A. V. MACAN, who taught the profession in Dublin how to "scrub up," expressed the belief that he would be the last Master of the Rotunda Hospital. TROUSSEAU and CRUVEILHIER were also in favour of closing large maternity hospitals; but happily the situation changed again as Listerian principles were adopted by the hospitals, and their records once more became better than those of outside practitioners. Now, however, history seems to be repeating itself, for the public is suspicious and the lay press has again started an attack on maternity hospitals. A. S. M. MACGREGOR's recent report on four outbreaks of sepsis in institutions in Scotland certainly makes it clear that the propinquity of women in lying-in hospitals is a potential source of danger, but gives the impression that the technique practised in the institutions concerned was unsatisfactory. The danger of infection in hospital is chiefly associated with infected patients, and a reference to the reports of any of the leading maternity hospitals will reveal the fact that these patients are almost always rendered septic before they are admitted. G. W. THEOBALD [3] has reported 36 such cases admitted to one institution in a single year. This suggests that if general practitioners were to do no obstetric operations other than the application of "low forceps," and were to send all other patients needing operative treatment to hospitals before they were contaminated, the risk of puerperal infection could be eliminated from hospital practice. The advantages of the institutional treatment of maternity cases are obvious, and there is not a specialist in obstetrics who does not prefer, if not insist, that these patients should enter some institution for their confinements. We cannot forecast what will be the logical deduction from the report on a sample series of septic cases in private practice, the publication of which is imminent.

[1] See THE LANCET, April 12th, p. 809.
[2] Brit. Med. Jour., 1928, ii., 974.

A DENTAL JUBILEE.

THE annual meeting of the British Dental Association, which was held in London this week, had a special significance, for in this year the Association attained its jubilee.[4] While dentistry, both as a profession and a science, is much older than the British Dental Association, yet the evolution of modern dentistry is largely a matter of the last 50 years, so that the history of the Association is in many respects the history of dental science in this country. Mr. NORMAN BENNETT, the new President, sketched the rise and progress of the Association showing how intimately this body has been concerned in all the various phases of dental activity since it commenced its career. When the Association was founded as the result of a meeting of a body known as the Dental Reform Committee, the Dentists Act of 1878 had been in existence for three years. The practice of dentistry had been actively advancing for the preceding 20 or 30 years, and the Dental Hospital of London (now the Royal Dental Hospital) had been in existence for over 20 years, and had trained many practitioners. The Odontological Society, now merged in the Royal Society of Medicine, was firmly established as the premier body devoted to dental science and dentistry, even then, was beginning to assume some of its main features which still remain in essence unchanged. There had been some sharp fights previous to the passing of the Dentists Act of 1878 as to whether dentistry should develop as a branch of medicine, or should become autonomous. This conflict of opinion, which even to-day is not yet extinct, was still acute at the time of the founding of the British Dental Association,

[3] THE LANCET, 1926, ii., 633.
[4] An admirably illustrated Jubilee Book has been printed for the Association by Messrs. John Bale, Sons, and Danielsson.

but this body played a part of considerable importance in bringing about relative unity in the profession. The first President of the Association was Sir JOHN TOMES, perhaps the most notable of the many famous men who have advanced the profession of dentistry. The Association started with 383 members. This year there are over 4000, an increase which, though slower than its members would like, has brought a majority of qualified dentists into membership of the Association.

From the first the Association had to fight hard to maintain the position of the dental profession and its claim to public recognition. The part it has played in extending the sphere of dentistry may be recalled. The naval and military dental services are post-war creations whose value is now universally recognised. But as far back as 1881, T. GADDES, an early President of the Association, pleaded for the instruction of army medical officers in dental surgery. In 1886 inspection of the teeth formed part of the examinations of candidates for the naval reserve, but the War Office refused to consider the proposal, and it was not until after the South African war that a tardy commencement was made by the appointment of a few civilian dental surgeons to the troops. Remembering what dentists did in the late war, not merely in the treatment of jaw injuries but in the less dramatic but equally useful work of treating diseased teeth and providing efficient dentures, it seems incredible that in 1914 the official establishment of the navy was three dentists, while in the army there were nine dentists at home and seven in India. On the outbreak of war the Association placed its whole organisation at the service of the Admiralty and War Office, and succeeded in the face of apathy and even of opposition in putting the dental service of navy and army on a sound basis, an achievement which has not received the recognition it merits. More important still was the extension of public dentistry in public elementary schools, a work with which the Association has been intimately connected. Papers on school dentistry were read before the Association by W. M. FISHER of Dundee, who may justly be called the pioneer of school dentistry, and whose work recently received the recognition of a pension from the civil list. Another prominent member of the Association who did much work on behalf of school dentistry was GEORGE CUNNINGHAM who, in conjunction with SEDLEY TAYLOR, founded the school clinic at Cambridge in 1907, which to-day is not only the senior clinic, but in many respects the most efficient. A committee appointed by the Association have issued since 1890 a series of valuable reports, laying down the broad lines on which a school dental service should develop.

The evils of unqualified dental practice were soon recognised by the Association, which tried to bring about an improvement in the standards of private practice but without immediate success, owing to various legal decisions which, in effect, largely nullified the intentions of the 1878 Act. The Association was closely connected with the intricate negotiations leading to the passage of the Dentists Act of 1921, which brought unregistered practice to an end, and stamped out the grosser evils of advertisement and quackery. Here Mr. BENNETT modestly said nothing in his address about the important part which he played himself in the preliminaries to the passage of this Act. For a time it seemed as though the Act would bring not peace but discord to the Association, and the controversies about the merits and demerits of the Act threatened a secession of membership. But time has healed these differences, and it is now universally recognised that, while the 1921 Act may have its flaws, and while it entailed self-abnegation on the part of the qualified dentists, yet it has brought great benefits both to the public and to the dental profession. Since the war the inclusion of dental service as an additional benefit under the National Health Insurance Act has led to a far-reaching extension of dental treatment to the industrial classes. This has implied difficult and intricate negotiations with the approved societies, in which the British Dental Association has played an important part. The results have not met with universal approval. Criticisms have been made by aggrieved dentists that the Association has sold the pass and sacrificed the interests of the dental profession. Parallel criticisms have not been unknown in the history of medical insurance practice; they are, perhaps, inevitable where a professional body has to negotiate with bodies representing different interests. But when the full story is known we believe the British Dental Association will be found to have played a statesmanlike part in its negotiations with the approved societies, and to have succeeded in obtaining conditions which, while short of the ideal, are yet a distinct and permanent gain to the dental profession and to the public. So much for the 50 years that are past. In the development of sound dental practice and policy we believe the Association is destined to play a part of increasing importance in the future.

ENCEPHALITIS IN THE ACUTE SPECIFIC FEVERS.

THE encephalitis which may follow the acute specific fevers must always arouse interest by the suddenness of its appearance and the rapidity and completeness with which it may disappear. This interest has been increased by the recent incidence of encephalitis following vaccination and by the controversy which has arisen over the causal relationship between the encephalitis and the specific fever which it may follow.[1] The large increase during the last two years in the number of published cases in which encephalitis has followed one of the acute specific fevers may be due to an actual increase in the incidence of such cases or to the prominence which has been given to post-vaccinial encephalitis both in the medical and in the lay press. We are inclined to the view that the increase is not only apparent but actual, especially as regards measles, chicken-pox, and small-pox. In this country cases following chicken-pox have been reported by D. M. WINNICOTT and N. GIBBS in London (1926) and by GRAHAM[2] in Glasgow. The Glasgow cases were of interest in that in both the chief symptom was ataxia, which fortunately was of short duration. Similar cases have been published by PAOLO GALLI in Italy (1925) and by RENDU[3] in France; the last-named author calls the condition "cerebellitis."

As to the pathological anatomy of these varicellar cases, and consequently their possible relationship to post-vaccinial and post-variolar encephalitis, we are still completely in the dark, because no post-mortem material is so far available. But in respect of the cases following measles we are on surer ground. Not only is the increased frequency of this complication of measles within the past few years undoubted, but post-mortem material has been examined in this country, on the continent, and in America with, on

[1] See THE LANCET, March 8th, 1930, p. 525.
[2] Graham, S.: Arch. Dis. Child., 1930, v., 146.
[3] Rendu, R.: Jour. de Méd. de Lyon, 1929, x., 767.

the whole, concordant results.[4] Of those who have investigated the histology of post-morbillar encephalitis some have found a purely hæmorrhagic encephalitis. Others have discovered a pathological picture which resembles so closely that of post-variolar or post-vaccinial encephalitis that it must be grouped with them (F. WOHLWILL, 1928; and J. G. GREENFIELD, 1929). This group is characterised by zones of demyelination surrounding a large proportion of the vessels in the affected regions of the brain and spinal cord, and to it the name of "acute disseminated encephalomyelitis" has been given. This name, or to be more precise "fleck-like or disseminated myelitis," was used by C. WESTPHAL in 1873 to describe the condition of the spinal cord in two cases of acute myelitis following small-pox (probably the first cases of the kind to be examined histologically), and it therefore bears the authority of age. While it is sufficiently descriptive of the pathological process, a more precise and less elastic term would be better. For there has been a recent tendency in Germany to include in this group cases which have not the sudden onset of those which follow small-pox and vaccination and in which the lesions are less definitely perivascular in arrangement. There seems to be no doubt, however, that some cases of acute myelitis which have no relationship to a specific fever may present a pathological picture of this type. Two cases are described by GREENFIELD in the current number of the *Journal of Pathology and Bacteriology* of acute myelitis following a febrile attack labelled "influenza" in which changes in the spinal cord resembling more or less exactly the lesions found in post-vaccinial encephalomyelitis were found. Such cases should certainly be included within the pathological group of "acute disseminated encephalomyelitis"; but it is less easy to assign a nosological position to the encephalitis which follows other febrile conditions. Encephalitis following German measles has lately been described in France by DEBRÉ, TURQUETY, and BROCA,[5] and last year in our own columns by J. H. E. BROCK. In their sudden onset and in their symptoms—which included neck rigidity, trismus, and myoclonic twitchings with unconsciousness—they resembled many of the cases which follow measles, but recovery was always rapid and complete. The fatal cases of scarlatinal encephalitis have usually been found to be hæmorrhagic in nature. Hæmorrhagic encephalitis also occurs after "influenza" and apart from specific fevers, and bears little or no histological resemblance either to disseminated encephalomyelitis or to encephalitis lethargica. The cases of "encephalitis" or of acute cerebral symptoms which may occur in the course of whooping-cough must, according to HILLER and GRINKER,[6] be assigned to a different cause—viz., thrombosis or spasm of small blood-vessels. They have had the opportunity of examining a case in which hemiplegia came on without any relationship to cough, so that the cerebral ischæmia which produced the symptoms could not have been due to a purely mechanical cause. Other writers have found a hæmorrhagic encephalitis in whooping-cough as in other infectious diseases.

The encephalitis or meningo-encephalitis of mumps has perhaps more claim than any of the others to a direct relationship with the virus of the disease. Not only are cases of encephalitis more common in this than in any other infectious disease (nine cases of encephalitis among 476 of mumps were reported by R. L. HADEN in America in 1919), but a lymphocytosis has been found in the cerebro-spinal fluid in a number of cases which presented no nervous symptoms. The most interesting cases are those in which the nervous symptoms either precede or replace the parotid swelling. Cases of the latter kind have lately been reported by WEISSENBACH, BASCH, and BASCH,[7] who point out that, in the absence of an epidemic, or of the development of the typical parotitis in contacts, it may be impossible to make the correct diagnosis. The severity of the initial cerebral symptoms and the presence of a high lymphocytosis in the cerebro-spinal fluid may give rise to needless alarm, for recovery is almost always rapid and complete. A few cases have, however, proved fatal. The direct causal relationship between the encephalitis and the virus of the disease which is suggested by these observations is substantiated by the experiments of MERVYN GORDON, who in 1914 reported that he had produced a fatal meningo-encephalitis in monkeys by intracerebral inoculation of filtered saliva from cases of mumps.

It is clear, therefore, that encephalitis following the acute specific fevers may be of various forms. Not only may those which follow one fever differ from those which follow another, but more than one form may follow one kind of fever. More knowledge is needed on these points and on the controversial question of the causation of acute disseminated encephalomyelitis. In the meantime we shall be wise if we restrict the latter name to the cases in which a histological examination shows that this form of encephalitis is present, and reserve our judgment as to the nature of the encephalitis which may follow varicella and rubella.

[4] See THE LANCET, 1929, i., 241.

[5] Debré, R., Turquety, R., and Broca, R.: Presse Méd., 1930, p. 348.

[6] Hiller, F., and Grinker, R. R.: Arch. Neurol. and Psych., 1930, xxiii., 634.

[7] Weissenbach, R. J., Basch, G., and Basch, M.: Ann. de Méd., 1930, xxvii., 5.

Annotations.

"Ne quid nimis."

EPSOM COLLEGE.

THE Council of Epsom College have instructed Messrs. Pite, Son and Fairweather, the well-known hospital architects, to prepare detailed plans and specifications and to obtain tenders for a new school sanatorium of 50 beds, estimated to cost approximately £25,000. It is hoped that the building will be completed in the autumn of 1931. With this decision the programme of improvements and extensions, commenced in 1924 and carried on steadily ever since, will be concluded except for relatively minor additions. Since that date there have been erected the war memorial chapel, a large chemical block, a new games pavilion, and a fine covered rifle range, with numerous other extensions to existing buildings. The erection of the new sanatorium will permit of the present one being turned into an additional house for 40 boys, bringing the total number of boys up to 440, and so enabling the admission of at least a moiety of applicants who now have to be declined. Sketch plans of the sanatorium were reproduced in these pages on Dec. 3rd, 1927, and only small modifications have been introduced into the final plans. These follow closely the lines on which the Ministry of Health consider that a model school sanatorium should be built, and the Council have received valued assistance from medical officers of other leading public schools in their aim to provide

such a building as will meet all likely needs for years to come.

Up to date only some £8000 has been received in response to the special appeal made to the profession; for this the Council have to thank generous individual donors, the British Medical Association, THE LANCET, the medical staffs of a number of hospitals, various societies and other bodies; it is hoped that still others will help to swell this sum materially, so that the Council may not have to draw largely on funds that they are anxious not to deplete. It is still open to a donor of £10,000 to give his own name or the name of any person whom he desires to commemorate to the main sanatorium, and a donor of £5000 may do likewise to a single block, while a large ward may be named for £3000, or a small ward for £1000, and a single bed for £100. All donors of ten guineas and upwards are entitled to votes, proportional to their donations, at the annual elections of Foundationers and Pensioners, and such donors become life governors of the College.

Donations will be gratefully received at the Epsom College Office, 49, Bedford-square, London, W.C.1.

LYMPHATIC ANASTOMOTIC CHANNELS.

MANY anatomists are aware of inadequacy in the standard accounts of lymphatic drainage from particular regions or organs. These accounts do not meet the requirements of clinical work, usually because little or no stress is laid on the anastomoses between lymphatic fields. The lymphatic vessels of any region or structure have a developmental or segmental value, and their drainage paths are interconnected as are those of veins. The vessels are associated closely with the veins of a part and show, with these, those evidences of long descent which are often obscured in arteries. Dr. O. W. Roberts, in the April number of the *British Journal of Surgery*, calls attention to what he terms "the dorsal lymphatic system" as a common secondary anastomotic path along which the infection of a growth may extend to far distant parts. This anastomotic utilisation is a necessary consequence of the rapid obstruction of the direct path, and indicates the need for recognition of anastomotic fields. Though the dorsal lymphatic system has not been described, so far as we know, by previous writers, we have no doubt that Dr. Roberts is right in his postulate. The system might almost be assumed on general grounds; it would correspond with the intraspinal venous drainage, issuing intersegmentally, and the plaques of growth mentioned by Dr. Roberts would correspond with laminar radicles of the issuing spinal veins. Under these circumstances the associated glands would lie near the azygos veins—in other words, would be in the posterior mediastinum—and the infections as he describes them would follow of necessity. The broad and generalised results brought out in this paper, founded on the observation of 700 cases of malignant growths, cannot fail to be of interest; with regard to the dorsal system the pathologist has been able to go further than the anatomist, although the latter has good grounds for assuming its existence.

NUTRITION OF THE YOUNG IN FRANCE.

THE question is often raised whether individual taste and traditional habit are trustworthy guides to the choice of an adequate dietary. The answer so far as the civilised races of mankind are concerned is almost certainly no; for modern machinery and transport have made it possible for men to live cheaply on incomplete yet palatable foods which may in the long run induce profound bodily disturbance. In every civilised country at the present time the feeding of the population is being examined critically in the light of nutritional research, with particular attention to the child and adolescent, in whom the results of faulty diets are more easily recognised. In France, the traditional home of the culinary art, a proposal has been put forward for the appointment of a Commission to inquire into the optimum dietary régime for children of various ages. The National Federation of Domestic Instruction is strongly in favour of the proposal, and its President, Mme. Moll-Weiss,[1] has appealed to the Académie de Médecine for support. Preliminary observations have convinced her of the need for comprehensive inquiry. She finds that the food given to children resident in institutions is monotonous and deficient in accessory factors, and only too often the same criticisms are applicable to the diets of children living at home. The breakfast of bread and coffee, almost universal, is condemned as quite inadequate to support a child through a morning of hard work. The midday meal usually comprises soup, fish or meat, a vegetable which is almost always of the dried variety, and cheese or cake; fresh vegetables and fruit are rarely served, and there would appear to be a genuine shortage of accessory factors in the diet as a whole. There is no uniformity in the quantities of basic foods allotted to children in different institutions. In one school a daily allowance of two ounces of dried vegetables is given, in another four ounces; here the meat ration may consist of two or three ounces of cooked meat, there one pound of raw meat. While it is recognised that a varied dietary is of the greatest value for any child, Mme. Moll-Weiss thinks there must be some limits to the variations in the quantities of essential basic foods compatible with optimum physical development. The feeding of young recruits in the services is considered to leave much to be desired. Not only do their dietaries fall short of the modern standards in respect of their choice of foods, but their meals are served in such primitive fashion that the young men must form the impression that food has no other function to fulfil than to satisfy hunger, whereas it would not be difficult to train them during their years of service into good feeding habits which would be of permanent value in improving the standard of nutrition throughout the country. The proposed Commission would be expected to formulate guiding principles on the nutritive requirements of the young; their recommendations would then be broadcast by specially trained teachers of domestic science familiar with the principles of hygiene, expert in constructing diets and cooking. It would be their task to see that the overlay of nutritional science does not banish from dining room and refectory the variety, the elegance, and the originality of the meals for which the French nation has so long been famed.

TUMOURS OF THE LACRYMAL GLAND.

DISPLACEMENT of the eyeball downwards without much proptosis usually suggests a frontal mucocele or a periosteal tumour, but it may also be due to a tumour of the lacrymal gland. This is a comparatively rare condition and the fact that a good many cases have been recorded in the literature is no proof to the contrary. Dr. W. L. Benedict[2] records that within the last three years five patients have been operated on at the Mayo Clinic for so-called mixed tumours of the lacrymal gland. These tumours are usually surrounded by a rather dense capsule, are slow in growth, lie in close contact with the superior orbital wall in the lacrymal fossa, may or may not involve the gland itself, and are easily removed by a brow incision when they are small. There are records in the *Transactions* of the Ophthalmological Society of the United Kingdom of these cases from 1882, when the late Mr. Henry Power showed a case under the title Fibro-sarcoma. Up till quite recently most of the cases have been called "endothelioma," but other titles have been "adenosarcoma," "lymphosarcoma," "cylindroma," and "adenocarcinoma." Perhaps the best plan is to use the non-committal term "mixed tumour," for the

[1] Bull. Acad. Méd., 1930, ciii., 417.

[2] Proceedings of the staff meetings of the Mayo Clinic, April 30th, 1930.

pathologists are no more agreed as to their origin now than they were 30 years ago. The point of practical importance is that although these tumours in the majority of instances are non-malignant, in a certain number of cases they do recur locally and may even become malignant. Mr. Leslie Paton recorded a case in 1910 in which recurrence took place in the glands of the neck with a fatal result. The treatment while the tumour is still small is easy by means of a brow incision, but sometimes surgeons have had recourse to Krönlein's operation. In case of recurrence, exenteration of the orbit has sometimes been necessary. In 1916, after a second recurrence, Mr. Finzi employed radium with apparent success. Recently, in Dublin, Miss E. Maxwell (in 1929) treated a case, first with X rays, and then with radium, but the eyeball had, ultimately, to be removed. In a case which was shown by A. Hugh Thompson[3] in 1902 in which the ordinary surgical removal had been performed, and the lacrymal gland removed at the same time, a second orbital growth of a precisely similar nature but much smaller was removed 11 years later and there was no further recurrence. Dr. Benedict states that these tumours contain adenomatous, myxomatous, and myxosarcomatous tissue with occasional regions of bone or cartilaginous tissue. Some of them have a distinctly glandular structure, but they may be quite separable from the lacrymal gland and may arise either from accessory glands or possibly from embryonal tissue in the orbit, involving the lacrymal gland secondarily.

TREATMENT OF WAR STRAIN.

IN a recent issue attention was drawn to the position of the neurasthenic ex-Service man when called upon to answer a police-court charge; his mental condition was often ignored and seldom investigated thoroughly. In civil life he was at an equally grave disadvantage, since employers were chary of engaging a man in an unstable nervous condition. Under the presidency of Sir Frederick Milner, the Ex-Services Welfare Society attempts to restore to such men their capacity to encounter the stresses of modern life. It is as disheartening for the society as for the man himself to find that he is unable to succeed in a post which has been found for him; and if it seems certain that commercial employment, with its attendant atmosphere of competition, will prove too great a strain the man is offered work in the society's industrial colony at Leatherhead. Neurasthenic patients, when working under conditions which relieve their anxiety, are painstaking and thorough, and at least capable of supporting themselves. The minimum wage offered by the society to those employed is £2 5*s*., but several of the men earn as much as £3 10*s*. New trainees are maintained free of charge at the associated hostel, and receive a weekly bonus of 7*s*. 6*d*. while training. Electro-radiant Thermega blankets and pads are manufactured at the industry, and are sold at a cost which compares favourably with foreign products of the same kind; as the directors and secretary of Thermega Ltd., are voluntary workers holding unsalaried posts it is possible to enter into successful competition with rival firms. Any profits go to the development of the industrial scheme. Medical and psychological treatment of the more serious cases is carried out at the society's homes; in many cases excellent results have been obtained among men who were previously incapable of supporting themselves. Lack of accommodation has proved a serious handicap in the past, but the society has recently taken over a new property, Eden Lodge, at Beckenham, where it will be possible to admit at least 40 more patients. The society undertakes, in addition, financial and advisory assistance; as the man with an anxiety neurosis is little likely to profit by any treatment if he is concerned for his family during his stay in hospital, the society undertakes the charge of those dependent on him while he is under treatment. The freedom from anxiety on this score is found to benefit the patients considerably. In several cases where an early mistake in diagnosis or ignorance of his just dues has left the patient with an inadequate pension, the society has been able to make successful representations to the Ministry for an increase. The constructive work of the society, which makes a responsible productive citizen of the neurasthenic who has been dependent on others for years is of economic value to the whole community; the importance of such a metamorphosis to the patient himself can scarcely be imagined.

[3] Trans. Oph. Soc., 1902, p. 252, and 1912, p. 79.

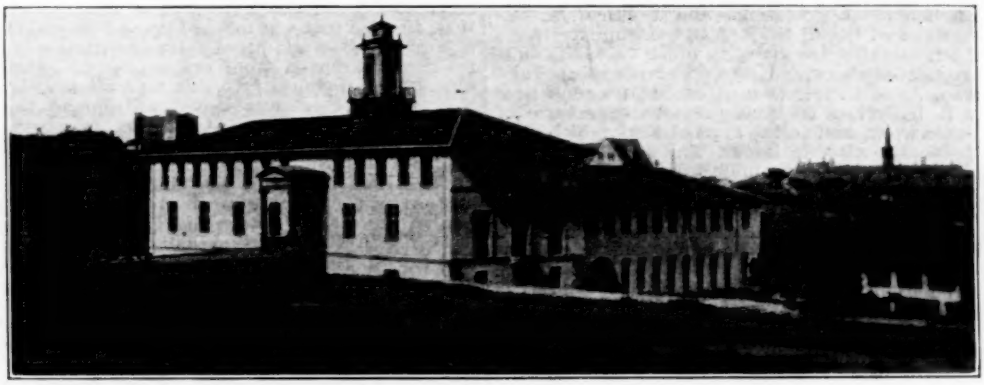
IMMUNITY TO WHOOPING-COUGH, CHICKEN-POX, AND RUBELLA.

THE first results of a research into the factors which control the spread of epidemics of chicken-pox, whooping-cough, and German measles were communicated to the Section of Epidemiology of the Royal Society of Medicine on May 23rd by Dr. Percy Stocks. After showing how recent work on diphtheria, scarlet fever, cerebro-spinal fever, acute poliomyelitis, malaria, and measles had fixed attention once more on the state of immunity of the attacked population as the main controlling factor in the spread of these diseases, Dr. Stocks described a new and simple statistical method of using the notification records of any infectious disease to elucidate the changes which take place in communal immunity. Hitherto it has been impossible to make more than a guess as to why certain children contract such diseases as whooping-cough or chicken-pox whilst others escape. The possibilities are inherent immunity, latent immunisation, or avoidance of infection, but there has been no evidence on the relative parts played by each of these factors. When compulsory notification of an infectious disease has been in force for some years in an area, and school records of contacts to cases of this and other diseases have also been kept, it should be possible in the future without employing any elaborate statistical processes to settle these points and thus to go far towards understanding the characteristic features of epidemics of different diseases and the most hopeful lines of preventive work. The method described by Dr. Stocks consists in (1) a study of the *index of apparent infectiousness*, which he explained in THE LANCET of April 12th, p. 786, and (2) a study of the *subsequent behaviour of contacts* over a period of years—compared with control groups of children not so intimately exposed to infection or immunisation. A simple application of the first method to the notification records of diphtheria in St. Pancras showed that, on the assumption that one-third of the children in the exposed population escape contact with infection, the proportion of those who are immunised by latent processes to those exhibiting clinical signs of the disease is approximately 5 to 1, a result which agrees with conclusions reached by Schick tests. A similar calculation for scarlet fever led at once to an equation between the proportion of children who retain an inherent immunity and the ratio of latent immunisations to clinical cases which was in close agreement with an equation deduced independently from records of Dick tests thus if one-quarter to one-third of the children born retain an immunity after their first year, as these tests suggest, the ratio of latent to clinical cases is three or four to one. Dr. Stocks applied the methods also to records of notified cases of whooping-cough, and contacts to them, in Wandsworth and Holborn; he arrived at the conclusion that in this disease latent immunisation is non-existent or of very little importance, and further that the great bulk of children who escape whooping-cough in urban areas do so by virtue of an inherent immunity rather than by avoiding contact with infection. With reference to chicken-pox, seven years of notification records in Paddington showed an inverse relation between the size of the mid-

summer and autumn epidemics; school closure for the summer holiday did not account for the cessation of epidemics in August and their recrudescence in October, which were characteristic features of the years under review. Analysis of notification records and of the after-histories of contacts suggested that a certain proportion, possibly a quarter to a third, of children born retain an inherent immunity to chicken-pox, and that latent immunisation protects others—possibly another quarter. The ratio of latent to clinical cases was not likely to be greater than about one to two, but Dr. Stocks considers it necessary to analyse more data before this can be asserted with confidence. The St. Pancras records of German measles when examined by the first method seemed to show that, as in measles, latent immunisation is a controlling factor, but further work was also required here. In submitting these preliminary results Dr. Stocks urged the importance of preserving the original notification records, especially of those diseases which are only notifiable in a few areas, for useful advances in our knowledge of the mechanism of epidemics might follow a proper statistical treatment of these records over a series of years.

A NEW AUSTRALIAN SCHOOL.

THE new School of Public Health and Tropical Medicine in Sydney, which is shown in the accompanying illustration, was opened on March 6th by the Hon. Frank Anstey, Minister for Health for the Commonwealth of Australia. It will carry on the work of the School of Tropical Medicine which has been in existence since 1907 at Townsville, and its inauguration follows a recommendation made by a Royal Commission of Health, which issued its report in January, 1926. The commission proposed that a chair of preventive medicine should be established with an adequate department of tropical hygiene, and that the University of Sydney should be selected for this purpose. It also recommended that a feature of the work should be a collection and condensation of the records of the medical administration of the Pacific Islands. The school is housed in its own building within the university grounds, close to the medical school. Erected at a cost of £35,000, it provides for departments of parasitology, entomology, bacteriology, pathology, and chemistry, whilst sections dealing with physiology, industrial hygiene, epidemiology, vital statistics and sanitary engineering are contemplated. The school will be under the control of a council composed of representatives of the Commonwealth Government and the University of Sydney. Dr. Harvey Sutton has been appointed director. It will provide especially for the post-graduate training of public health personnel, but will also include special non-medical courses of school hygiene in the diploma of education, and of tropical hygiene in the diploma of anthropology. The courses for the diploma in public health and for the diploma in tropical medicine have already been commenced, and a diploma of tropical hygiene is contemplated. A library to deal with public health and tropical medicine is being built up from a nucleus, previously existing at Townsville, which it is hoped will be complete in all Australian aspects.



School of Public Health and Tropical Medicine, University of Sydney.

REGISTER OF BIOPHYSICAL ASSISTANTS.

THE first register of biophysical assistants published by the Society of Apothecaries of London contains the names of 463 persons, arranged both alphabetically and topographically, who have been given a diploma by the Society. This first batch of diplomates have been admitted without examination, having offered satisfactory evidence of experience extending over two years in a hospital or three years in private practice in administering physicotherapy under medical supervision. The conditions under which the diploma is held involve an undertaking that biophysical assistants will not undertake the treatment of any patient except under the direction and control of a doctor, that they will not advertise in a professional sense except in the recognised medical and nursing papers, will not sell goods to patients in a professional capacity, or accept secret commissions on the sale of goods. Their diplomas are returnable to the Society of Apothecaries if these regulations are contravened. In the future, recruitment to the register will take place by examinations, of which the first is to be held next month. The course of training is to extend over 18 months, of which at least 12 months shall be occupied in clinical instruction. The syllabus for Part I. includes anatomy, physiology and physics, and for Part II. the theoretical principles concerned with electricity, the various types of current used in medicine, radiant heat, light therapy, and medical diathermy. Chartered masseurs and masseuses will be exempt from Part I., and members of the Chartered Society of Massage and Medical Gymnastics who hold the Society's certificates in medical electricity will be admitted to the register of biophysical assistants on signing the necessary undertaking and paying the required fee.

The establishment of the register arose out of a suggestion made to the Society of Apothecaries of London by a committee of the British Medical Association, following a resolution by the Representative Body, who were concerned for the protection of the public from the risks of physical treatment by untrained persons. The need for qualified technicians has become an urgent problem since the popularity of rays of different wave-lengths has reached and even overtaken that of electric currents. The

manipulation of radium and the adjustment of X ray apparatus have such obvious dangers that quite untrained persons are not, perhaps, likely to attempt these procedures. It is doubtless for this reason that the registration of technicians skilled in handling radium and X rays has been considered less urgent; moreover, the Society of Radiographers to some extent fills the need, since its members undertake to work only under medical supervision. To switch on lamps which emit rays, visible or invisible, on the other hand, seems a simple job, and many are tempted to assume that it calls for no special skill. The fact that the erythema caused by large doses of ultra-violet light does not appear at once, but is delayed for some hours, is an additional reason for demanding an experienced administrator. The Biophysical Advisory Committee who have compiled the regulations for the examination, include: The Master of the Society, Lieut.-Colonel C. T. Samman, Dr. J. D. Bailey, Dr. A. E. Barclay, Major-General D. J. Collins, Prof. W. E. Dixon, F.R.S., Sir William Hale-White, Dr. C. B. Heald, and Dr. F. D. Howitt. We have no doubt that practitioners will appreciate the convenience of knowing that members of the register have a sound grounding in electrical and light therapy, and will gladly employ them.

SCHOLARSHIPS FOR STUDENTS OF MENTAL HEALTH.

THE Child Guidance Council announces that by the generosity of the Commonwealth Fund it is able to offer six scholarships of about £181 each to students taking the Mental Health Course of the London School of Economics and Political Science (Department of Social Science and Administration). These scholarships are given in order to assist suitable candidates who would otherwise be unable to take the course, and in selection of candidates consideration will be given to their previous experience of social case work, and to the type of work which they wish to pursue after training. The scholarships are open to those wishing to undertake social work for children or adults at child guidance and hospital clinics, at mental hospitals, and in associations for the care of mental defectives. They are also open to hospital almoners, children's workers, and probation officers. The chief subjects of the course are psychology, psychiatry, and social case work, and it is held during the autumn session and the subsequent vacation. Further particulars may be had from the secretary of the council, 7, Buckingham Palace Gardens, S.W.1.

AN ITALIAN JOURNAL OF LABORATORY TECHNIQUE.

A NEW monthly periodical published in Naples is likely to prove a useful supplement to books on laboratory methods in this and other countries by putting on record the newest investigations. The journal is edited by Prof. Luigi D'Amato, of Naples, and the editorial committee contains, besides those of well-known clinical pathologists in Italy, the names of J. J. R. Macleod (Aberdeen) A. Castellani (London), and H. G. Wells (Chicago). The first issue, which is before us,[1] contains an article by Dr. G. Emanuel of Berlin, on the colloidal mastic test in the diagnosis of neuro-lues. This test, which is of easy technique, is regarded as useful in the differential diagnosis of the various morbid types. In an article by Dr. L. Cattaneo of Pavia, the author proposes a modification of Hackenthal's method for the discovery of cow-pox virus in the blood. He centrifuges the blood made incoagulable by means of heparin, decants the plasma, adds a few drops of extract of fresh organs to the sediment, leaves it for an hour at a temperature of 37°C. and takes off the thin film which forms on the surface of the clot. The virus is found in large quantity in this thin pellicle of leucocytes and platelets. Prof. A. Lustig of Florence contributes a review on the analogies between the bacilli of undulant fever and contagious abortion. He discusses the work done at the institute for general pathology in Florence, and agrees with Favilli that the components of the genus brucella are different types of the same germ and that the bacillus of Bang, generally not pathogenic for man, may at times become so, and assume characteristics absolutely identical with those of *B. melitensis*. Prof. G. Sollazzo of Milan describes the use of phenol-alcohol in the Wassermann reaction and pleads for more extensive observations on the method of Ninni and Molinari. There are editorial articles on Kolmer's reaction and ultra-filters, and summaries of medical literature arranged under classified headings. The longer articles have been resumed in Italian, English, French, and German.

[1] Diagnostica e tecnica di laboratorio. Rivista mensile. Vol. I., No. 1. January, 1930.

VIRUS DISEASES AT THE ROYAL SOCIETY.

THERE were two exhibits at the Royal Society's conversazione at Burlington House on May 14th which were of unusual interest to medical visitors. Both dealt with virus diseases. Mr. S. R. Douglas and Miss J. Marchal, from the National Institute for Medical Research, showed a number of naked-eye and microscopical specimens illustrating a new disease they have found in mice. It was originally recognised by observing that certain stocks of laboratory mice were particularly liable to a swelling of one hind foot followed by gangrene and loss of the end of the leg. Attempts to transmit the infection by bacteria cultivated from the lesions were unsuccessful, but if an affected foot was mashed up and filtered through a porcelain bacteria-proof filter the disease could be readily transferred from one mouse to another by inoculation of the filtrate. It was afterwards found that the disease was more widespread than the gangrenous lesions suggested; mice may suffer and die from it without losing a foot, the constant lesions in all animals being necrosis of liver and spleen. This implies that the name of "infectious ectromelia" chosen by the discoverers is not altogether happy, and in any case "ectromelia" is normally applied to a congenital defect rather than an acquired condition. Would it not be better to avoid the pitfall of a definitive name altogether and call it simply "Marchal's disease"? Another striking feature is the number and size of the "inclusion bodies" which occur in the cytoplasm of epithelial cells in the skin, pancreas, and salivary glands, occasionally also in connective tissue. In some of the sections shown they were so large and formed such a large proportion of the tissue that it looked as if their extraction and analysis ought to be possible.

The other exhibit dealt with plant viruses, particularly tomato mosaic, and came from the Rothamsted Experimental Station under the charge of Dr. J. Henderson Smith. Two points in particular were illustrated, of which the most strikingly objective was again the characteristic inclusive bodies as they develop in the epidermal hairs on the leaf. They here reach such a large size that they are easily seen with the low power of the microscope, and their growth and evolution may be precisely followed. In their early stages they are made up of amorphous granules, but later on there is distinct evidence of the separation of protein crystals. It is not supposed that the bodies actually are the virus, but that the virus upsets the colloidal equilibrium of the cell contents with the separation and finally crystallisation of some of the protein contents. Other specimens illustrated the fact that virus will not pass from one part of a tomato plant to another through a length of stem which had been killed, though water and such dyes as eosin readily do so. There is, in fact, no evidence that the movement of virus within a plant takes place in the water or transpiration stream. This raises something of a mystery, for in general any infected plant contains the virus throughout and it spreads quite quickly

from the locus of an artificial inoculation. Those who are inclined for further information will find a useful survey by Dr. Henderson Smith in the current number of *Biological Reviews*.

LEAGUE OF NATIONS HEALTH COMMITTEE.

AT the recent session of the council of the League of Nations the Health Committee of the League was reconstituted for a period of three years from July 1st. The new members of the Health Committee appointed by the council after consultation with the outgoing committee include Dame Janet Campbell, Senior Medical Officer for Maternity and Child Welfare, Ministry of Health, who is chairman of the committee of health experts on infant welfare of the Health Organisation of the League. Sir George Buchanan, Senior Medical Officer, Ministry of Health, has been reappointed a member of the Health Committee on the nomination of the governing body of the Office International d'Hygiène publique in Paris.

POLLUTED STREAMS.

THE report[1] of the Water Pollution Research Board for the year ended last June is not so much a record of progress as evidence of coöperation between industry and the administrative authorities. The report points out that water for industrial purposes is often spoilt for industry by industry and that the growing population needs more and more to have recourse to rivers for domestic supplies. If we use the headwaters of a river for drinking purposes and if our factories use water from the lower reaches for industrial purposes, in each case we ought to return the effluent in such condition as to allow of a successful process of self-purification by the river. There is last but not least the æsthetic point of view. What a transformation in the countryside would be effected if all our streams and rivers were clean and fit to support fish-life. Further, we cannot cultivate respect for a stream which is used as a sewer or a conduit for unpurified trade effluents, or greatly blame those who throw litter or refuse into it. In recent years new processes dealing with artificial silk and the waste from milk and beet sugar factories have added to the problem, but science has not even solved the difficulties of sewage effluents and the waste waters from collieries and gasworks. Since its formation in 1927 the Board has coöperated in research with managers of sewage disposal works, the institution of gas engineers, the beet sugar factories' committee of Great Britain, and a committee of the Royal Sanitary Institute. The Tees may be taken as typical of a polluted river flowing through an industrial area, and a comprehensive biological, chemical, and hydrographical survey of this river has been undertaken by the Board. A summary of existing knowledge on the base-exchange or zeolite process of water softening has been issued, and further investigations are in progress from the physico-chemical point of view at the chemical research laboratory at Teddington and from the bacteriological point of view by Sir Alexander Houston. An investigation of the activated sludge process is being conducted by Prof. W. W. C. Topley at the London School of Hygiene. Another matter receiving attention is the gauging of rivers and streams for the purpose of obtaining exact knowledge of the flow of rivers and the effects of tidal flows. The special report of the Director of Research, Dr. H. T. Calvert, deals largely with beet sugar factories. He describes the operations at such a factory, which if it handles 1000 tons of beet may use three to four million gallons of water per day. Work at the experimental plant, Colwick, facilities for which were provided by the Anglo-Scottish Beet Sugar Corporation, Ltd., has already given hopes of so treating the waste waters that they may be re-used in the various operations.

[1] Obtainable from H.M. Stationery Office. A complete list showing prices may be had on application to the Department of Scientific and Industrial Research, 16, Old Queen-street, London, S.W.1.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles Contributed by Invitation.

LXXIV.

THE SIGNIFICANCE OF IDIOPATHIC SKIN REACTIONS.

PART II.*

WHAT DISEASES TO TEST FOR.

IN Part I. of this article it was made clear that we can produce a long list of symptoms by applying grass pollen to the hay-fever subject in various ways. From another point of view, it is useful to consider what disorders can be tested for by skin reactions. The list includes:—

1. *Conjunctivitis:* the sufferer is sensitive to some foreign protein substance in the atmospheric dust.
2. *Paroxysmal rhinorrhœa*, or *vasomotor rhinitis* (of which hay-fever is but an example). The mucous membrane or, as the case may be, the modified epithelium of the respiratory passages is sensitive to, and therefore reacts to, some foreign protein particles in the inbreathed air; possibly the irritant may be circulating in the blood.
3. *Asthma:* the foreign protein is either in the inspired air or, more probably, is circulating in the blood—a toxæmia in fact. It may be difficulty to guess what are the irritants in question.
4. *Urticaria, eczema, ichthyosis*, or any mixture of or intermediate stages between these three; the poison is probably circulating in the blood, but it may have gained adventitious entrance to the skin—e.g., by a prick or midge-bite.
5. *Angioneurotic œdema*, which is a subcutaneous accentuation of urticaria.
6. *Functional albuminuria*, which is a serous exudation or urticaria of the kidney: if this disorder arises from a protein sensitisation the protein must arrive as a toxæmia.
7. *Paroxysmal hydrarthrosis*, which is a similar serous effusion into a joint.
8. *Migraine*, if from the history of the case or the familial history it is suspected that some foreign substance is causing the trouble through a sensitisation: if a sensitisation is suspected it must be to a toxæmia.
9. *Epilepsy*, if a sensitisation is suspected; a toxæmia.
10. *Food idiosyncrasy*—i.e., nausea, vomiting, and diarrhœa as a local reaction to the food itself: the irritant is clearly some ingredient in the ingested food.
11. *Dysenteric symptoms, tenesmus*, possibly such conditions as *cyclic vomiting*, may be due to a sensitisation: the irritant is not necessarily a foodstuff; more probably it is bacterial, or some product of digestion, and it may, of course, be present as a toxæmia.

It is noteworthy that the sensitisation of the patient to a foreign protein may give rise to a number of these disorders simultaneously; or these disorders may alternate or change from one to another—e.g., first migraine, then asthma, then urticaria, then back to migraine. Or the eczema which a child suffers from in babyhood may change to asthma after whooping-cough or pneumonia. In such a case one is searching for the ætiological agent for several "diseases" at once. Also (and this leads to much complication of testing) there may be with one patient a number, often a large number, of foreign substances each capable of producing any of these disorders.

The "Protein Irritant": Allergens.

The substance to which the sufferer is hypothetically sensitive has been spoken of as the "foreign protein"; this terminology may be questioned, since occasionally patients are demonstrably sensitive to such substances as morphine—or even such chemically simple substances as potassium iodide (see below). Another objection is that the active agent may not be a protein, but a much simpler substance, perhaps attached

* Part I. appeared last week.

to the protein molecule, which causes the disorder and also causes the skin reaction. This may be so, but since the reacting substance (in pollen or horse dandruff or fish myoplasm) will not go through a dialysing membrane, it seems justifiable when dealing with immunity phenomena to speak of them as protein substances. Making use of von Pirquet's term "allergy" which he coined for his tuberculin reaction, it has been the custom, especially in America, to label all the toxic idiopathies, all the diseases of the asthma group, as "allergy" or "allergic phenomena," although there seems to be an inherent difference between asthma, for example, and tuberculosis in the mechanism of the skin tests. If we accept this extension of the meaning, then the reacting substance, causing the disorder or the skin reaction may aptly be called the "allergen."

What Substances may Function as Allergens.

An infinity of substances may cause the asthma group phenomena—any particular animal or vegetable protein (including all the unclassified moulds and bacteria), or any product of any of these proteins when denatured by heat or chemicals. Even our own tissues when denatured by trauma or chemicals such as morphine or potassium iodide are capable of acting as the "foreign protein." This gives an impossibly unwieldly list and means that skin tests must be embarked on with discriminating intelligence; they should never be ordered at random by the physician or carried out blindly by the pathologist. Experience shows us that random tests seldom give much help because of the difficulty of knowing what to suspect.

Another great difficulty is that these allergens do not react equally on the skin; one type, grass pollen, is unusually good, so are the scurfs of animals—e.g., horse. Food substances are weaker in their action; and that important group, the fungi, including all the pathogenic bacteria and the enormous numbers of unclassified moulds, not only tend to give indeterminate reactions, but also delayed reactions (comparable to Pirquet's tuberculin reaction).

The useful application of skin tests, if we exclude those which are merely confirming a diagnosis brought by the patient, depends largely on whether we can pick up useful hints about possible allergens from a questionaire.

What Proteins Should we Test: A Questionaire.

Before deciding what skin tests to make, or even if such tests are worth making, the patient should be closely cross-questioned with allergens in view. The following suggested questions are not universally applicable—one cannot, for example, reasonably ask at what hour an attack of eczema started. Also, these patients are so suggestible that it is better to reach, say, the "horsehair mattress" indirectly. It is amusing to hear a woman explain that a feather pillow instantly gives her asthma when she is at that moment lolling on sofa cushions from which a few small white feathers are protruding.

How long has the patient had the disorder, continuously or off and on? What seasons of the year are worst, what are the least troublesome?

On what days of the week are the attacks worst? Very often patients will incriminate the week-ends—an interesting point, though it is not always easy to see its bearing.

At what hours are the attacks worst, or when do they usually start? The answer is often: "Usually at night, and very frequently at 6 A.M. or when I begin to get up." This answer bears on the psychological factor in asthma, &c.; it is only significant for us here as showing indirectly that the proteins of food are playing little or no causal part in the illness.

Does food affect them? The evidence is slight or overwhelming. Usually, food does not affect them as a *specific protein*, though they have probably been told that it does. Food affects the asthmatic, &c., in at least four ways: (1) By introducing proteins to which the patient is sensitive (reaction in 20 minutes to 1 hour). (2) By causing bacterial fermentation in the gut; to these bacteria the patient may be sensitive (reaction in 24 hours approximately). They will probably blame "rich" food and sugar. (3) By overloading the stomach and thus setting up disturbing nerve reactions (¼ hour to 6 hours). (4) By suggestion, through remarks they have heard from others (reaction in any time, according to gossip, but usually within half an hour). The first of these is the one most talked about but is the least frequent; it alone can give positive skin reactions to specific food proteins.

What preceded the first attack? Bacterial sepsis is often implicated here, and anyway should be studied as carefully as the septic foci in a rheumatism case are investigated—how any suspected cultures are to be used will be described later.

Do places make a difference? Here one must guide the patient in discriminating between different localities and different houses or even rooms. The presence of mould spores in the dust of rooms is an important point. They had better be tested for by means of an extract made from the dust—to be described later. Trouble from the water-supply must be kept in mind, and if necessary, an extract made.

What are the home and what are the work-place surroundings? Does the patient see much of animals, birds, or horses? Does he work in a dusty atmosphere—e.g., flour or sawdust?

What is the toxic idiopathic history of this patient and of his blood relations? A line on probable directions for investigation may often be gained from this inquiry; one of a group of these diseases tends to run in a family.

How to Obtain Protein Reagents for Testing.

Reagents should approximate as closely as possible (chemically speaking) to the protein irritant suspected of causing the trouble; if practicable they should be the identical substance. Thus, if a man is egg sensitive a trace of white of egg will serve for the testing; hay-fever can be detected through any grass pollen; the pollen of any suspected flower can be dusted on to a scratch on the forearm, but any such sensitisation is merely accessory to true hay-fever and comparatively unimportant. An animal sensitisation can be diagnosed by means of a few hairs from the animal. A set of protein reagents, if they have been much "prepared" may easily have become denatured and so give only a poor reaction or none at all. I myself have failed to get reactions on horse asthma patients with the horse dandruff reagent supplied by several first-class firms, but have got it at once on getting some fresh curry combings from the nearest stable. It is, therefore, suggested that the practitioner should examine his case first by some such questionaire as is given above and make a list of the proteins he wishes to test; he should postpone the actual testing till the next session. He will probably be able to extemporise from his kitchen or his garden the substances he requires. If necessary, the juice of a vegetable or of plasma from meat or fish can be expressed, but as a rule the unaltered material will do perfectly well. Such material as animal scurf and animal hairs can be used unaltered, or if preferred an extract can be made in normal saline and 0·03 per cent. sodium carbonate. The best way of sterilising such extracts or fluids is to put them through bacterial filters; but heavy centrifugalising will remove solid particles.

If this is deemed unprofessional or if a diagnosis has to be attempted out of hand, then recourse must be had to the sets of proteins on the market, and there are several to choose from. Or the practitioner may wish to make his own supply—particularly where, as with grass pollen, the material cannot be obtained all the year round.

There is one alleged advantage of the sets of reagents—one may have a group test—i.e., a mixture of all the members of the group: thus, a fish group, a nut group, a shell-fish group, an animal hair group, a stone-fruit group, a meat group, and so on. But if a single protein may fail to react if too much prepared, then still more easily may a single ingredient in a group mixture fail. Besides, preliminary testing with group reagents means blindfold testing—which should never be necessary, and is of doubtful utility. The home-made reagent is the best.

I spoke in a preceding section of cultures of bacteria, suspected of causing trouble by sensitisation. Though these are to be had in the sets of reagents, it is clearly

better to work with the patient's own cultures. A thick emulsion of the bacteria should be allowed to autolyse so far as they will, and then be centrifuged heavily to get rid of solid particles. I also spoke of dust, particularly fine house dust from the top of cupboards; this should be extracted in saline with a trace of sodium carbonate in it (0·03 per cent.). After extraction in the ice-chest for several days it should be put through a bacterial filter. Drinking water may be evaporated down at 45° C. under a vacuum. When it is reduced to a small bulk the concentrated salts are dialysed out.

If the particular protein is quite new to the investigator it would be wise to make a test on a normal skin (e.g., on his own) to make sure that the substance is not a universal irritant.

Routine Technique for Skin Tests.

A convenient site for testing is the flexor surface of the forearm; but if there is to be any scarring then the upper surface of the thigh, just above the knee, is preferable for women and convenient for children. Preliminary cleansing of the skin is probably quite unnecessary, but if thought desirable soap and water are the best.

A number of small areas, say 3 mm. in diameter, are scratched through the skin till the pink cutis vera is laid bare but without the drawing of blood. One such scratched area should be reserved as the control. Onto the other areas the various protein reagents are placed and gently rubbed in with a small glass rod or the wrong end of a wooden match in order to make intimate contact between the foreign protein and the living cells of the skin. After a minute or two any debris or blood can be cleared off the scratched areas with saline and cotton-wool so that the wealing, &c., can be clearly observed. A reaction will be precisely like that described above for hay-fever. It will begin in 7 minutes, and be fading in 20 minutes, reaching its height in 10 to 15 minutes. A positive reaction should show an urticarial weal not only over the scratched area, but extending beyond this with irregular edges; round the weal will develop the erythematous blush. This may be a scarcely perceptible pink rim round the weal or may extend beyond it for 2 or more inches; in any event, to be positive both must be definitely bigger than anything appearing on the control site. Such a method as this is very convenient for the rubbing on of solid substances, such as a piece of Brazil nut or a piece of carrot, and it can quite easily be used for fluids—e.g., cow's milk or horse's serum—it is, in fact, universally applicable.

Another method is to place a drop of fluid containing the test protein onto the skin and then to prick with a sharp needle through the drop vertically into the skin, only puncturing the skin to the depth of half to one millimetre. This puncture injects a minimal quantity intradermally, and is easy to make comparable from protein to protein and from day to day. For purposes of record it is convenient to trace on an ordinary microscope slide the central prick, the weal, and the surrounding erythema, or such of it as will go on to a slide. (If a wash of dilute egg white is smeared over the slide and allowed to dry this will facilitate the inking-in but is hardly necessary.) With this prick method a control prick should always be made through saline, and any reaction judged to be positive must be definitely larger both in the weal and in the erythema than anything shown round the control prick.

A special word must be said of extracts prepared from bacteria, moulds, or other fungi—frequently a dust extract comes under this head. These reactions are rather indefinite and tend to be delayed; sometimes they are at the height of their reaction an hour or two afterwards and sometimes even next day. Indeed, the condition begins to approximate to a von Pirquet reaction. It cannot be denied that it is a great disadvantage that two such important groups as the bacteria and the moulds give such comparatively unsatisfactory reactions. Perhaps it is better with them to make a filtered extract and then an intradermal injection can be given.

Conclusion.

If the application of a protein reagent produces no reaction this may mean that the preparation used for the test (1) does not tally quite with the protein suspected as the cause of the disease—it may, for instance, have got denatured in the process of preparation; (2) it may be of a type (e.g., bacteria) which at best only gives a poor reaction; or (3) the failure may really mean that the patient is not sensitive to that particular substance.

If the reagent produces a definite reaction under suitable controls then the patient is sensitive to that particular reagent. But this sensitisation may not be causing *all* the mischief—or, indeed, any part of it. For example, a man who has been careful to avoid lobsters for years will not think one has got to the bottom of his trouble if the flesh of one gives a positive reaction, and he is merely told to avoid them in future. However many positive reactions one may get it is always possible that the chief "asthmatic" factor has not yet been detected; in fact, any degree of confidence on this point can only be gained by a really painstaking questionaire as detailed in a previous paragraph.

Any positive skin reactions must have this significance at any rate; a patient's tendency to react puts him definitely into the sensitisation class and he is a candidate for all or any of the toxic idiopathies—even if the causal protein irritant has not yet been detected.

JOHN FREEMAN, D.M., B.Ch. Oxf.,
Director of the Department of Clinical Bacteriology, St. Mary's Hospital.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lt. J. D. J. Freeman to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. G. H. J. Brown, having attained the age for compulsory retirement, is placed on retd. pay.

Maj. and Bt. Lt.-Col. (temp. Lt.-Col.) F. A. McCammon to be Lt.-Col., vice Lt.-Col. G. H. J. Brown.

Maj. and Bt. Lt.-Col. R. E. U. Newman to be temp. Lt.-Col.

Maj. R. B. Myles retires, receiving a gratuity.

The undermentioned Capts. to be Majs. (substituted notifications): E. Percival, R. D. Cameron, H. M. Alexander, A. G. Harsant, J. K. Holland, and M. C. Paterson.

The undermentioned Lts. (on prob.) are confirmed in their rank: G. F. Harrison, A. N. T. Meneces, E. F. Curran, and F. R. Gedye.

ARMY DENTAL CORPS.

Capt. B. E. Gentleman to be Maj.

ARMY RESERVE OF OFFICERS.

Lt.-Col. J. H. Fletcher to be Lt.-Col.

MILITIA.

Majs. J. A. Pridham and T. Warrington relinquish their commns. and retain the rank of Maj.

TERRITORIAL ARMY.

Lt. J. S. M. Connell to be Capt.

D. L. Cran (late Cadet Corpl., Manchester Univ. Contgt., Sen. Div., O.T.C.), to be Lt.

Lt. A. McDowall to be Capt.

ROYAL AIR FORCE.

Flying Officer F. G. Mogg is granted a commission in the Special Reserve on resignation of his commn. in Class D.D.

Flight Lt. J. B. Woodrow relinquishes his commn. on completion of service.

DEATHS IN THE SERVICES.

Col. Charles John O'Gorman, D.S.O., R.A.M.C., who received his medical education at the Catholic University of Dublin, and was late senior house surgeon at the Mater Misericordiæ Hospital, died at a nursing home in Dublin on May 11th in his fifty-eighth year. He entered the Royal Army Medical Corps in 1898, and served in the South African War of 1899–1902, where he was at the defence of Kimberley and in operations in the Orange Free State and in Cape Colony (twice mentioned in despatches, Queen's Medal with three clasps, King's Medal with two clasps, and the D.S.O.). During this period he was promoted to captain—namely, in 1901, to major in 1910, and to Lt.-Col. in 1915. In the late war he served as an assistant director of the medical services.

Special Articles.

"ON SIGNING YOUR NAME."

A Clinical Lecture delivered at Guy's Hospital on May 19th, 1930,

BY T. B. LAYTON, D.S.O., M.S. LOND., F.R.C.S. ENG.,

THROAT AND EAR SURGEON TO GUY'S HOSPITAL; CHAIRMAN OF THE LONDON INSURANCE COMMITTEE.

As members of the medical profession we often have to sign our names to documents which appear at first to be of small importance but which may under certain circumstances have far-reaching effects. These documents fall under two heads, those which are signed by us as a part of our medical work and which contain some professional opinion, and those which we sign because the right or privilege has been given to us by the nation or otherwise as a mark of the confidence in which we are held. This power to sign our name should be held by us to be a sacred duty that we should at all times carry out with all the care that is within our power, and I want to discuss with you to-day some principles that should guide us in doing this duty.

Carelessness and Neglect.

I may start by giving two examples that have come within my experience where there has been a failure to perform it, in the one due to gross carelessness, and in the other to criminal neglect.

CASE 1.—Some 22 years ago I was a medical officer in a large poor-law infirmary, and one day did a round for a colleague off duty. As I finished the sister said: "There is Daddy Twenty's pension paper to sign." I looked at it and said, "Where is his discharge certificate?" Although the patient had been under her charge for over two years, the sister had never heard of this. Each week the doctor had signed the paper without seeing this document, although by his signature he said that he had that day seen the certificate and the pensioner, and that he believed him to be the person described thereon. The sister was a bit indignant that I would not sign. The young woman who had come to fetch it was more so, saying she wanted the money that day, and had to return to work by 2 o'clock. I pointed out that it was then 12, that she had plenty of time to go home and fetch the document, and that if she wanted the money so badly it was worth this effort to obtain it. She went away, and no question of a pension to be drawn by that patient was ever raised again.

I have but little doubt that certain persons had been causing this old man to impersonate some dead pensioner over a period of two years or more. This could only have been rendered possible by the false certificate signed weekly by my friend.

CASE 2.—At Christmastime, 1916, I was the senior medical officer of a small detached force of 7000 men in Northern Greece. The O.C. the R.E. Coy. came to me saying that as things were quiet it would be a convenient time to get his men inoculated. I was surprised that he had any appreciable number of men uninoculated, for we had left England but six months; and great efforts had been made to get everyone in the division injected before we left. I, therefore, sent a sergeant over to his orderly room to examine the pay-books of his men. In the last page of this a medical officer entered every inoculation as he did it, dating and initialing his entry. My sergeant brought back a report that all the pay-books were entered up as though the men had been inoculated immediately before we had left this country. I told the O.C. this, and he then informed me he had reason to believe that all these entries were false. He had only taken over the command a day or so before we had left, but he had learnt that actually hardly any of the men had been done. We inquired further of the N.C.O.'s of the Company, and learnt that the M.O. in charge had let time so slip by that there were no longer the necessary number of days before embarkation for the inoculation to be done, and that, finding himself in this fix, he had made entries in all their pay-books as though he had inoculated them, whereas in fact he had only done two or three. This officer was not with our small force, but he was still with the Division some 100 miles away, and I reported the matter to the A.D.M.S., saying that I thought there was no doubt there was evidence enough to obtain a conviction on court-martial. I was informed that no action would be taken, that the Divisional Commander did not want a scandal in the Division, especially in reference to an officer of the R.A.M.C., for fear it would weaken the confidence in which the medical officers were held.

Let me at the outset lay stress upon the different view the doctor and the layman takes in these matters. I think we should all agree that the second of these two cases was the more serious. That the medical officer there had no sense whatever of professional honour when he definitely endangered these men's lives by making false entries in their pay-books to cover his own slackness. Yet here was a Divisional Commander, himself the very soul of honour, who would take no action in the matter. This was not weakness on his part; he was ruthless in following up any suspicion of neglect of a sick or wounded man on the part of any member of the R.A.M.C. I have no doubt he would have taken a most serious view of Case 1, and in this he would have the support of every lawyer, financier, or administrator who would feel that the very system upon which our complicated finance is based was being undermined by the doctor's neglect. Understand that it is impossible to defend that action to laymen or even to plead mitigation of the offence.

Pressure from Without.

In neither of these cases was there any pressure from without, yet in many there is and the doctor places his signature against his better judgment. Such pressure may be a fear of social opprobrium or of financial loss. To give in to it is weakness, a weakness with which we may condole, but which we must not condone, for when it brings its owner in trouble and he is faced with his signature on the document anything said in extenuation appears but as a specious argument.

CASE 3.—One evening a neighbour dropped in upon a doctor, asking him to sign a passport paper for her brother-in-law. He replied that he would be delighted but, on looking at the document, added that he could not, as it stated that he knew the applicant personally. The lady indignantly suggested that surely he could trust her, adding that if he did not sign they could not go on their trip, as the paper must go in next morning and there was no time to get any other eligible person to sign. The doctor's wife supported her, not wishing to have any unpleasantness in a new neighbourhood to which they had recently moved.

I am glad to say I know of no case of improper signing of a passport paper by a doctor; but this case shows the pressure that may be put up by unthinking people, who have no idea that they are doing dishonourable deeds. Such pressure must always be resisted. The right to sign a passport paper is one of the things that puts us above the common herd. It is the recognition by the State that the code under which we live and work is a higher one than the average of the community.

CASE 4.—A doctor working at the Ministry of Pensions was asked by the head clerk to sign his paper for a weekly pension. He looked at it, and pointed out that the signature involved his saying he had that day seen the pensioner's children alive. In an unpleasant tone the clerk said, "The children are at school. I can't bring them here." The doctor suggested he could between 12.30 and 2, and offered to wait during that period to see them. In a huff the clerk removed the paper, saying, "I can easily get someone else to sign it. I have never been asked to bring the children before." For several weeks after this the number of sessions that the doctor was called up for attendance at the boards showed a diminution.

The importance of this case shows that there must be a number of medical men prepared to sign a document without reading it or else without a due appreciation of their responsibility when signing. This clerk had been drawing his pension for over two years and apparently he had no difficulty in getting some medical man every week to sign a false statement on his pension paper. The men working there were all from the consultant branch of the profession.

There is another very common reason given for asking a doctor to sign a certificate wrongly. It is that unless he does so some poor person cannot draw the weekly money and the invalid, his wife and child must go starving without it. Against such suggestion you must rigidly set your face. Either the regulations for drawing the money are bad and should be amended, or the person bringing the certificate for signature has let time slip by, so that he or she is faced with the difficulty out of which you are asked to get him. In neither case is there any reason why you should put your signature to a false statement and risk the whole of your career thereby. Let there be no doubt about this. When you are faced with that document and its misstatement no arguments about doing it out of kindness to the sick will protect you. The case is bound to go against you and no one can save you.

If you are brought up before the General Medical Council you are liable to be struck off the rolls. If the case comes up in a civil or other court you will break down in cross-examination; and if it is a case under the National Insurance Act you will, as we shall see later, get into serious trouble.

Signing an Unfinished Document.

In association with this never sign a form in blank and leave it for someone else to fill in. Some years ago, as we were going out of the ward, the sister asked my house surgeon to leave her some certificates and he turned round and signed in blank some half a dozen that she had ready for him. I was aghast at this and spoke most severely to both. The sister produced the usual arguments. That the house officer was out during the visiting hours when the relatives asked for the certificates and they, poor things, would have to come up again if these were not ready. I pointed out to her that with a little forethought on her or the patient's part the certificates could be got ready for the house surgeon to sign on his morning round. Then her arguments changed. Surely I could trust her to fill them in properly. This is a most dreadful argument to put forward. It is so difficult for a young man to controvert, especially when morning and evening he has to go round with the woman who puts it forward. The answer, of course, is that to sign a blank certificate is the same as signing a blank cheque for that, in effect, is what it is, the only difference being that it is a cheque on someone else's money. A house surgeon who gave the sister of his ward half a dozen blank cheques would be looked upon as a fool, but it is only his own money that can be drawn on them; to do so with documents on which someone can draw another person's money does not far remove him from being a knave.

Nor can any sister who is an accessory to this practice be considered free from blame. I do not know whether the General Nursing Council has any disciplinary control in the way our Council have; but in the event of such a certificate causing the doctor to be brought before the Medical Council the member of the nursing profession should be brought before her council. It should be considered as "infamous conduct in a professional respect" for a nurse to use her position in relation to a patient to influence the doctor treating that patient to do anything that can be so considered in respect to his profession. To my mind the only thing to do is to refuse ever to sign any document, even an admission slip to the hospital, unless and until it is completely filled in. You will thereby educate yourself not to sign any document till you have read it; and it will soon be known that it is useless to put an unfinished document before you and people will cease to do so.

A few days after I found the sister of my ward asking for blank signatures from my house surgeon I saw the physician in Clinical sign such a form and leave it for the clinical assistant to fill in. I remonstrated with him and he responded with the same high sounding rhetorical question: "Do you mean to infer I cannot trust Mr. X?" He failed to see that he was educating Mr. X in slipshod ways which he would carry out into the world with him. Your teachers are so busy trying to instil into you pathology and diagnosis with some smattering of treatment that they omit to teach you anything about the conduct of practice.

I find that leading members of our profession are not particular enough upon these points. They seem to think it undignified to do anything that they do not consider to be real medicine, and under this they do not include the signing of a document. Yet if they teach you nothing of the conduct of practice they should at least abstain from educating you by example in bad methods.

Do not for a moment think that these same physicians and surgeons will defend you when having risen to the top of the profession they come to sit upon the General Medical Council. They will not; nor if they would, can they protect you from the consequences of your action if you are brought before them with a certificate signed by you, the falsity of which has been proven before them. The Council has made this quite clear in the Warning Notice which they have issued to the profession and which contains the following:—

> Registered medical practitioners are in certain cases bound by law to give, or may be from time to time called upon or requested to give, certificates, notifications, reports, and other documents of a kindred character, signed by them in their professional capacity, for subsequent use either in Courts of Justice or for administrative purposes. (Here follows a list of documents, &c.) Any registered practitioner who shall be shown to have signed or given under his name and authority any such certificate, notification, report, or document of a kindred character, which is untrue, misleading, or improper, whether relating to the several matters above specified or otherwise, is liable to have his name erased from the Medical Register.

Certification for National Insurance.

Of the documents in this list, the most numerous, and from the national point of view, probably the most important, are those "under the National Insurance Acts and the Regulations made thereunder." Many, and perhaps most, of you will spend your lives by taking service under these Acts, and under Your Terms of Service you will agree to take on certain duties in the way of signing certificates. In the complicated state of our society we cannot exist side by side without the use of forms and documents; and upon the confidence that can be put in them must depend to some extent the stability of our social order. But I hope to show that a meticulous accuracy in such matters is nowadays also necessary for the proper treatment of our patients and is, therefore, as essential a part of medicine as is the ordering of an appliance or the writing of a prescription.

In the certificates that you will have to sign under this service there are two parts. The first involves a statement of fact, the second involves your medical opinion. The statement of fact which is included in every certificate is that you have that day examined the patient, and you have no right under any circumstances to sign this statement if you have not seen the patient on that day. Let us consider some cases which have been considered by the London Insurance Committee and where a doctor has done so.

CASE 5 (M. 29/11).—The facts of the case are as follows: The insured person was admitted to a hospital on Jan. 4th, 1929, and the society were furnished with a certificate of admission issued on that day. Certificates on Form Med. 40 were furnished, however, by the practitioner on Jan. 11th, 18th, and 25th, and each of those certificates indicated that the insured person had been examined by the practitioner on the dates appended respectively thereto. The first of this series of certificates—i.e., that dated Jan. 11th—contained a note made by the practitioner to the effect that the patient was in hospital.

CASE 6 (M. 29/21).—From the statements submitted to us by the society and the practitioner, we find the following facts to have been established: The insured person was first certified by the practitioner to be incapable of work on Dec. 11th, 1928, a First Certificate having been issued on that day indicating that the patient had been duly examined

on the date appended to the certificate and found to be incapable of work by reason of appendicitis. She was admitted to a hospital on Dec. 13th, 1928, and was discharged thereform on Jan. 10th, 1929. Intermediate Certificates were issued by the practitioner on Dec. 18th and on Dec. 24th, and in each of those certificates the practitioner certified that he had examined the insured person on the dates appended respectively to the certificates and found her to be incapable of work by reason of appendicitis. In the space for remarks, however, the practitioner indicated that the patient was in hospital. An Intermediate Convalescent Certificate (Form Med. 40 C) was issued by the practitioner on Jan. 12th, 1929, stating that he had examined the insured person on that day and found her to be incapable of work by reason of appendicectomy. A further Intermediate Convalescent Certificate was issued on Jan. 26th, 1929. The insured person went to Eastbourne on Saturday, Jan. 12th, 1929, and remained there until Sunday, Feb. 10th, 1929, and a Final Certificate, dated Feb. 12th, 1929, was duly issued by the practitioner.

CASE 7 (M. 30/13).—We find the following facts to have been established: The insured person was seen by the practitioner on Nov. 27th, 1929, and on Dec. 2nd, when the next consultation took place, he was given a First Certificate, written on Form Med. 40, stating that he was incapacitated for work by reason of gastritis. The practitioner, on information furnished to him by the insured person's wife, gave further certificates on Dec. 4th, 11th, and 18th, stating that he had examined the patient on the dates appended respectively to the certificates and had found him to be incapable of work.

The practitioner, in his written observations, stated that when he first saw the insured person on Nov. 27th he advised him, having regard to his (the insured's person) condition, to refrain from work, but the patient preferred to allow the matter to remain in abeyance for a few days. On Dec. 2nd the patient asked for a certificate, and the practitioner then gave him a First Certificate in respect of the examination on Nov. 27th. . . . . The patient's wife reported from time to time the progress of the case, and as this appeared to be satisfactory the practitioner issued the further certificates, his object being, as he informed us, to avoid any delay in the payment of benefit. He expected that the patient would attend at the surgery, and for this reason he did not put the case on his list for a visit. The practitioner added that during the routine of work he overlooked the fact that the patient did not present himself at the surgery. The practitioner expressed his regret for his laxity in the case, and undertook to be more careful in the future.

In all these cases the plea was put forward that the doctor had signed this statement in order to enable the patient to obtain the sickness benefit. Now it cannot be too clearly stated that the administration of sickness benefit is not the business of the medical profession. If there is anything wrong it is the business of the approved societies and the Ministry of Health to put it right. The medical profession is very insistent that the societies should not interfere with the professional aspects of the work; and you must play the game by not interfering with theirs.

Risk of being Party to Fraud.

It is right to be kind-hearted to your patients; but it is weakness of character rather than kindness of heart that leads you to sign a misstatement at the expense of your own career as well as at the risk of being a party to a fraud. That you are in danger of the last is shown by the following case.

CASE 8 (M. 27/1).—It appears that the case had its origin in the prosecution of the insured person by the society for having obtained sickness benefit under false pretences. There were five instances in respect of which the insured person was charged. In the first two of those instances, however, the doctor by whom the incapacity was certified is now deceased. The magistrate rejected the summonses on those two counts and dealt with the last three in which the practitioner who is referred to in this case certified the incapacity. The insured person eventually pleaded guilty and was sentenced to three months' imprisonment in the second division in respect of each charge, the sentences to run concurrently. The practitioner was present at the police-court, and, having regard to what he is stated to have informed the magistrate, the society felt it their duty to raise the question of the practitioner's certification with the committee, the society alleging that the practitioner had been careless in the matter. . . . . The second illness began on June 11th, 1925, the insured person being certified by the practitioner on that date as incapable of work by reason of a Colles's fracture. We understand that this was sustained by the insured person through having fallen in the street. An operation was performed at a hospital on June 18th, 1925. The practitioner continued to certify the insured person as incapable of work up to and including Jan. 15th, 1926, when a final certificate was given, this certificate being endorsed by the practitioner "Colles's Fracture. Not cured." As to this illness the society drew particular attention to the certificates dated respectively Sept. 15th and 22nd, 1925. These certificates were written on Form Med. 40 B, and indicated that the insured person would remain incapable of work for a period of four weeks from the date of the certificate. In the first of these two certificates the practitioner stated that the cause of the incapacity was a "United Colles's Fracture," while in the second he indicated that the fracture had not united in spite of operations. The next certificate, which was an ordinary certificate, was dated Nov. 7th, 1925. The next certificate received by the society was dated Dec. 10th, 1925, and this was a monthly certificate. It is clear that this particular certificate was not written by the practitioner, and it was stated by the practitioner that the insured person must in some way have appropriated a form, already stamped, from the practitioner's surgery and, after completing it, sent it to the society. The final certificate was given on Jan. 15th, 1926. On Jan. 13th, 1926, the insured person was instructed to attend for an examination by the Regional Medical Officer. This he did not do, and the society were told by the Regional Medical Officer that the practitioner had reported to him that the insured person "began work long over a month ago." The society then communicated with the practitioner and asked him if he would state the date of the final certificate, as it had not been submitted to them. The practitioner replied to the society to the effect that he had given the Regional Medical Officer incorrect information, his statement having been based on information received by him from the insured person, but that he had sent another letter to the Regiona Medical Officer.

There was a battle royal over this case. The subcommittee that first heard it reported that the allegation as to carelessness in certification was not proven. At the main committee, however, certain members took a different view and moved that he had failed to comply with the Medical Certification Rules, and that he should be censured and reported to the Minister with a view to a fine being imposed. Subsequently this motion was withdrawn and it was moved that he be cautioned. This was passed by a large majority. Against this he appealed and won, the following being a part of the report of the officers appointed by the Minister to hear the appeal.

The appellant maintained before us that he still thought that during the whole of the three periods the insured person was unfit to follow his occupation as a driver of a motor-omnibus. He did not consider the question whether the insured person was fit to follow any other occupation, because he thought there was a probability that he would recover sufficiently to be able to resume his ordinary occupation. He contended, therefore, that he was fully justified in certifying him to be "incapable of work." He thought at the time in question, and he still thinks, that the insured person was in such a condition that he could not drive a motor-omnibus without grave danger to himself as well as to his passengers. With regard to the issue of the two special intermediate certificates, he said that when he issued the second he had forgotten for the moment that he had issued a similar certificate shortly before. When he gave the first he thought the fracture had united, but before he issued the second he had revised his opinion and was satisfied that union had not taken place. He said that in such cases it was sometimes difficult to say definitely whether the fracture had united, and a further examination might not infrequently lead a medical man to form an opinion different from that based on a previous examination.

In this case we have to deal with the allegation that the appellant showed carelessness in his certification of the insured person. In our view the allegation has not been established. On the evidence laid before us we think that the appellant had sufficient grounds for forming the opinion that at the relevant times the insured person was "incapable of work," and for certifying to that effect, and, therefore that his appeal succeeds.

Now although this doctor was finally cleared he was put to much trouble to gain this end; and it may be worth while to inquire how he got himself into such a quandary. In the first place, he apparently used to sign blank forms for others to fill in just as the sister of my ward wanted my house surgeon to do. In the second place, he issued a

further certificate before a former one had run out, and in the third he had to admit he had given wrong information to the Regional Medical Officer. On medical grounds he was perfectly sound. He was of opinion that the man was unfit for his work, and the fact that the man did work did not alter this opinion.

Increase of Sickness and Disablement Claims.

So much for the statement of fact in the certificate. I now pass to a much more important point. The number of people who are drawing sickness and disablement benefit has increased enormously between the years 1921 and 1927. All who are taking part in the administration of these acts view with concern the state of affairs that is resulting from this. A white paper has been published (Cmd. 3548) dealing with an investigation of the Government Actuary into the matter. It was to this that the Minister of Health referred in the House of Commons on April 29th. From it we learn that the claims for sickness benefit has risen—

Among men	by	41 per cent.
,, unmarried women	,,	60 ,, ,,
,, married ,,	,,	106 ,, ,,

The really important fact is the growth in the number of claimants and not in the average duration of claims within the year.

Thus the percentage of insured persons claiming sickness benefit has risen as follows :—

	Men.	Unmarried women.	Married women.
1921	14	12	19
1927	23	21	38

Again the increase in claims for sickness benefit was most marked among the younger members of the population and for the shorter periods of illness :—

Ages	16–44	45–54	55–64
	Per cent.		
Under 1 week ..	70	43	34
1–2 weeks	82	58	28
2–3 ,, ...	88	68	31
3–4 ,, ...	71	65	18

As to the seriousness of the position I may quote the Controller of the Insurance Department at the Ministry of Health—Sir Walter Kinnear—who, in a recent address at the Faculty of Insurance, said :—

"Viewed from the standpoint of either the sociologist, the economist or the administrator, the figures just given cannot but occasion disquietude. Neither sex nor age is immune from the tendency to continuous increase in the claims expenditure, and it is impossible to predict that the peak has yet been reached. . . . .

"Obviously the prolonged spell of industrial depression through which the nation is still passing must be an important contributory factor towards these results. There are, no doubt, many insured persons who will work as long as work is available even though their state of health may be such as would justify a claim for sickness benefit. When work is not available, these persons automatically come on the funds, and their ranks become increased by many whose physique is debilitated by prolonged unemployment.

"It is impossible to measure the extent to which the growth of the sickness claims has been accelerated by economic forces, but it is obvious from the figures that the growth has been out of all proportion to the increase in the burden of unemployment and that a complete explanation must be sought elsewhere. In that field of speculation it would not be profitable to travel very far, but the disconcerting increase in the sickness claims of women, and especially married women, as compared with men, points to the probable operation of certain economic factors, such as the relation of sickness benefit to wages, the family responsibilities of the individual, and the fear of subsequent unemployment where incapacity is prolonged."

But it may be asked where does the doctor come in? The answer to this is that not one of these persons can draw sickness benefit for a single day without a medical certificate. This is the axle upon which the whole administrative wheel is supported and revolves.

Now I am not going to admit for a moment, as some people are prone to suggest, that the whole of this increase in sickness benefit is due to lax certification upon the part of doctors. Unemployment undoubtedly leads to increase in illness in many ways which it is unnecessary to detail here. But I do think there is some laxity of certification, and that it behoves the medical profession to take stock of their position and to help in facing this problem. By laxity of certification I wish to distinguish from wrong certification. Up to now we have been considering the latter, but in lax certification we deal not with statements of fact but with the condition of the patient and the opinion based thereon. When we sign a certificate are we sure that the condition of the patient warrants his remaining away from work? Two cases that have come under my notice within a week suggest there are many where this deduction is not warranted :—

CASE 9.—A man came to my out-patient department with nasal polypi. We were to remove them at out-patients at several sittings at intervals of about a fortnight. The most that it was necessary for him to be off work was 24 hours after each seance. Yet I discovered at the end that he had been drawing sickness benefit for eight weeks. He said that this was because his employer had said it was no use coming back until the job was finished.

In this case the doctor who had signed the certificates must either have had a very lax idea of how much illness was needed to keep a young man from work; or else he suffered from a confusion of thought between the employer's convenience and the funds of the nation.

CASE 10.—A telephonist from whom I had removed tonsils had a recurrence of her attacks of aphonia. From this she got better, but she got another week's certificate until I could see her.

This is a more difficult case; as the doctor might have feared she was in for something serious. Sometimes these attacks are the first symptoms of phthisis in a lightly built girl. If he thought this, however, the doctor should at once have started investigations along this line, by sending her to the tuberculosis officer of the district. If he did not think so there was no reason why she should not have gone back to work and have taken an hour off to see me when I came down to that district.

So much for direct evidence. I do not like hearsay, but rumours are very persistent that many doctors dare not refuse a patient a certificate for fear the patient should leave him at once and go to another doctor. One hears this constantly from all parts, Lancashire as well as London. It is a difficult thing about which to obtain confirmatory evidence, but it is a still more difficult thing to refute.

To allow people unduly to remain away from work is bad medicine; when we have been ill we all need a little stimulation to return, and we never get quite fit until we do. The kindly encouragement of the general practitioner with his pat on the shoulder and his quiet-spoken "Well, try for a day or so and see how you get on" must have enabled millions to resume work and to find to their surprise that they were ready for it. As our methods of practice pass into new shapes we want to retain this personal touch; and if we do not other methods must be found to supply that stimulus. To my mind the most serious point in these figures is that the increase is most marked among the young.

Let a layman put this medical view before you—again I quote Sir Walter Kinnear.

"The effort to resume a normal life is hard to make, no doubt, when the will is enfeebled by long incapacity and the introspection it induces. But the effort itself is invigorating, and, to a certain type, no greater service can be rendered than the exercise of gentle pressure to 'try' which is expressed in the refusal of further benefit on the advice of an official medical referee."

Remember that every time you knock a person off work unnecessarily, and every time you refrain from stimulating him or her to return when fit you are helping to manufacture a valetudinarian, and every time you allow a person to step into this you are on the way to making an unemployable.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

A Hospital for Convalescence.

THE Astley Ainslie Institution was formally opened by the Lord High Commissioner on May 22nd, but has actually been in partial use for over a year. The buildings now standing in the splendid park, facing south, include the old house of Millbank, which was formerly the home of James Syme, the famous Edinburgh surgeon. Joseph Lister married Syme's daughter in 1856 and the marriage took place in the drawing-room of the mansion house. There are also two other properties—Canaan Lodge and Canaan Park. These three, and the ground attached, form the superb site for the new convalescent establishment. This contains a kitchen department, nurses' home, scientific department for treatment and research, and two special pavilions. The plans provide for the accommodation of 150 patients, with a staff of 42. The scientific department contains research laboratory, radiographic and radiotherapeutic installations, a gymnasium for remedial exercises, a dental room, a dispensary, and other offices. There will also be open-air shelters, sun-baths, and recreation grounds for patients.

This splendid endowment was left by Mr. David Ainslie of Casterton, who died in 1900, and directed his trustees to apply the residue of his estate to "the purpose of erecting, endowing and maintaining a hospital or institution for the relief and behoof of the convalescents in the Royal Infirmary of Edinburgh." The name "Astley" has reference to Mr. Ainslie's nephew and heir, John Astley Ainslie, who predeceased him. The Board of Governors represent the Royal Infirmary, the College of Justice, the Royal Colleges, the Edinburgh Merchant Company, the Chamber of Commerce, Society of Accountants, the Presbytery of Edinburgh, and the Corporation of Edinburgh, along with the only surviving trustee, Mr. Scott.

The site of the institution, which commands a full view of Blackford Hill, the Braid Hills and the Pentlands, formed at one time a part of the Borough Muir, which played a great part in the history of Scotland in the sixteenth century. This was the mustering ground for the march to Flodden. In earlier days, too, it is said that the ancient chapel of St. Roque stood here, a resort for victims of the plague.

The new departure in the history of the site will not be the least important, for the institution means a very material expansion of the Edinburgh medical school. Although associated with the Royal Infirmary, it will be independent. It opens a definite prospect of detailed study of the processes of convalescence.

Infectious Disease in Glasgow.

Dr. A. S. M. Macgregor's latest report shows that the infectious diseases death-rates in Glasgow for March and April were 1·2 and 1·1 against 0·9 and 0·7 a year ago. This is mainly due to measles, the number of cases recorded for the nine months being 5020. The percentage death-rate from measles is, however, only about 2·2, which reflects the mildness of this year's epidemic. In the epidemic of 1927–28, the percentage death-rate was 3·6. For the six months ending March, 1930, the number of cases was 13,988 as against 15,802 in the previous epidemic for a similar period.

Dr. Macgregor has an interesting note on cases of acute sore-throat followed by nephritis, with two deaths. Within the last few weeks a small group of cases have been reported. "The early symptoms are severe, with fever, and there is no evidence that the condition is due to scarlet fever; swabs from the throat are negative for the hæmolytic streptococcus, although this organism was recovered in one instance where three members of a family had nephritis following acute sore-throat, and in one or two of the other sporadic cases. The general hospitals report no increase in admissions for nephritis during the past three months, but, in view of the possibility of the presence of a throat infection followed by this complication, I shall be glad to receive information from medical practitioners who may have had recent experience of illness of this nature."

The late Dr. Robert Robertson.

Dr. Robert Robertson, who died on May 18th, was one of the best-known general practitioners in Edinburgh. He graduated in medicine at Edinburgh University in 1888 and took the B.Sc. in public health a year later. In his early days he developed a large practice and it was a pleasure to discuss medical problems with him, partly because of his very wide experience as a general practitioner and partly because of his freshness and originality. He was practical and at the same time critical. He had a very alert, speculative mind and took a keen interest in all current public health problems, serving for a considerable period as an active member of the Edinburgh Town Council. He was a competent critic of hospital conditions and he did not hesitate to express his views; but he was always fair and considerate both of the medical officials and of any lay opponents. In personal conversation one was always struck with his grasp of general principles and his quiet but broad humanism. His mother is now 104, and it is said that he paid her a visit every day of his life. It was precisely what one would expect of his sympathetic and understanding temperament.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Benefits for Northern Ireland.

THE Northern Ireland National Health Insurance (Medical Benefit) Bill was issued on May 14th. There was also issued a White Paper explaining the measure, and it sets out the main objects of the Bill as follows: (1) to include in the National Health Insurance Scheme a system of medical benefit; (2) to provide for an increase in the contributions payable under the National Health Insurance Acts; (3) to provide for the administration thereof; (4) to give effect to an agreement entered into with dispensary doctors with regard to the terms of insurance practice; and (5) to make alterations for the treatment of tuberculous insured persons. Since the commencement of the National Health Insurance Scheme in 1912 medical benefit has formed an integral part of the scheme in Great Britain, but Ireland was excluded so far as these provisions were concerned. The Bill proposes to extend the provisions of the National Health Insurance Act to insured persons in Northern Ireland so as to make them entitled to medical benefit on the same lines as insured persons in Great Britain. The Ministry of Labour is to be responsible for the administration of medical benefit with the assistance of a medical benefit council to act in an advisory capacity and certain local committees to deal with local problems. These bodies will replace the existing insurance committees. The medical benefit council will be representative of insured persons, employers, medical men, chemists, and certain members nominated by the Ministry of Labour. It will confer with and advise the Ministry on administrative questions, and will inquire into complaints referred to it by the local committees. These local committees will be representative of doctors, chemists, and insured persons, and will deal with the provision of medical benefits for persons failing to secure acceptance by doctors, and with complaints about treatment and supply and quality of medicines. In addition, committees will be established composed of representatives of the panel doctors and of chemists for questions of exclusive concern to both. One of the most important points in the Bill deals with the present dispensary system. Many persons who at present attend dispensaries for medical treatment are insured persons. Under the new scheme these will be entitled to treatment from a

panel doctor who in many cases will be the local dispensary doctor. It becomes necessary then to effect an adjustment in the remuneration payable to these medical officers, and they have agreed to undertake insurance practice subject to a reduction of 1*s.* 6*d.* in the rate per head ordinarily payable to insurance doctors for insured persons (9*s.*). Their present rate of pay as dispensary doctors will be unaltered. For the effective administration of the National Health Insurance scheme it is desirable that those in receipt of benefit should be visited at regular intervals, but as the insured population is scattered widely over Northern Ireland and is distributed over a large number of societies, it is not possible to do this fairly and effectively without some form of unified scheme available to all societies. The Bill provides that such a scheme be set up and controlled by the societies themselves, but should they be unable to do so before Jan. 5th, 1931, the Ministry may take the necessary steps to provide such a scheme. The domiciliary treatment of tuberculosis in insured persons will become part of the duty of the panel doctor under the medical benefit scheme. As regards the institutional treatment, this will be carried out by the county tuberculosis committees.

Introduction of the Bill.

The Minister of Labour, in introducing his Bill, stated that the death-rate in Northern Ireland was 3 per 1000 higher than in England. This had been attributed to climate and to factory life, but the climate in Northern Ireland and factory conditions were as good as in the North of England. The approved societies considered the high death-rate was due to the non-adoption of medical benefits. Some of the members criticised this, stating that the high rate of emigration left Northern Ireland with a large percentage of old and frail inhabitants; also, that if the inspection of school-children were more generally adopted the death-rate would be lower. Prof. R. J. Johnstone, M.P., who acted as chairman of the Local Government Commission which sat for three years to consider the whole question of the poor-law, summed up the feelings of the majority of medical men and social workers in Northern Ireland when he said in the debate on the Second Reading: "The lack of opposition to the Bill shows that at last public opinion in Northern Ireland is beginning to have a conscience in regard to public health. I am perfectly certain that this measure of public health will be only the forerunner of others that will remove the reproach that we are less interested in public health than the people of other civilised nations. I should have liked to see the recommendations of the Local Government Commission put into effect, with a revision of the entire administration of the public health and medical supply services. It is bound to come and I am sorry it has not come now."

Grants in Aid of Scientific Research.

For the purpose of encouraging and assisting scientific research the Ministry of Education for Northern Ireland is prepared to make grants to a limited number of research workers and students of approved qualifications. The grants, which will be made on the recommendation of the Advisory Board, will be of two kinds: (1) maintenance allowances to enable students to undergo training in research, and (2) senior research awards to enable young investigators of exceptional promise and proved capacity to devote their whole time to original research. Maintenance allowances, which will not exceed £100 and will not be tenable for more than two years, are for students recommended by the professor as able to take full advantage of the facilities for training in fundamental scientific research and who intend to take up a career in which they will devote the whole or part of their time to research work. The senior research awards will not exceed £250 per annum or be tenable for more than three years. The awards will be open to candidates who are not more than 27 years of age and who are recommended by the head of the laboratory or department in which they have been working. The investigators will be expected to publish the results of their research and will not be permitted to make commercial use of them without the previous consent of the Ministry of Education.

Dublin Hospitals and Religious Tests.

In the Dail last week, in the course of a discussion on certain Government grants which are paid to a few of the Dublin hospitals, it was stated by a deputy that the charter of one of the hospitals concerned—namely, the Rotunda Hospital—made it a condition of the appointment of its Master that he should be a Protestant. A suggestion was also made that the present Master had been induced to change his religion in order to render himself eligible for the post. On the following day Deputy Sir James Craig, on the authority of the Master of the Rotunda, gave an unqualified contradiction of both suggestions, and the deputy responsible for them expressed his regret for having made a statement on misleading information. It is, perhaps, just as well that the opportunity arose for giving a public denial to the widespread rumour that a religious test is a qualification for the Masterhip of the Rotunda. In only one of the Dublin Hospitals, as far as is known, is the profession of any particular form of religious belief a necessary condition for appointment to the staff. It is true, however, that some of the hospitals, having close association with particular churches or religious orders, are likely to have the majority of the members of the staffs in religious sympathy with such churches or orders.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Lübeck Disaster.

THE Lübeck disaster has caused much public alarm, for the number of deaths has risen to 21, and more of the children will probably die. A provisional report has been issued by Prof. Ludwig Lange, of the German Health Office, who was sent to Lübeck by the Government to make an inquiry. He stated that the infection was probably due to the administration of tuberculous material. It has not yet been ascertained for certain, he says, how the tubercle bacilli were introduced into the vaccine, but they were obviously already present at the beginning of the treatment. According to observations in various countries, a return of B C G bacilli to virulence has never occurred. It is thus probable either that tubercle bacilli were present in the cultures sent from Paris or that they were introduced into later cultures. It had not been proved that the cultures were adulterated by negligence in the Lübeck laboratory, but a final explanation can only be given after thorough investigation in the laboratory, which will take several weeks. Replying to a question in the Reichstag, the Minister of the Interior said he had instructed the governments of the individual States of Germany to abstain from using Calmette's method until the facts have been cleared up. A medical member, Dr. Moses, said that the Lübeck authorities had acted with great negligence in distributing a remedy which even in France was not quite established. They had informed the Health Office only 20 days after the first cases of infection were observed.

Prof. Calmette has stated in an interview that it is only to French hospitals that the Pasteur Institute supplies vaccine ready for use. To hospitals abroad the Institute does no more than send cultures from which vaccines can be prepared. Those sent to Lübeck were examined before dispatch and were found innocuous, and the Pasteur Institute is therefore not responsible for the disaster. In France, said Prof. Calmette, 225,000 children were treated by his method between July, 1924, to April, 1930, and no harm was done to any of them.

The German Surgical Congress.

The German Surgical Association held their annual meeting in Berlin from April 23rd to 26th, with Prof. W. Anschütz, of Kiel, in the chair. The first official subject of discussion concerned hæmorrhage and styptics and was introduced by Prof. R. Stich, of Göttingen, who said that high-frequency currents had proved useful as a hæmostatic. The second theme was operation on the vertebral column introduced by Prof. V. Schmieden, of Frankfurt. For vertebral tuberculosis he recommended conservative treatment, but if a cervical vertebra is dislocated Albee's operation is useful. He uttered a warning against opening the dura mater, because of the possibility of infection. In the discussion the majority spoke against Albee's operation. Prof. Rein, of Freiburg, reported that it has been observed that the circulatory organs of surgeons show signs of strain on days of over-exertion after severe operations. The mortality of surgeons is high, and circulatory troubles are the commonest cause of death among them, which occurs on the average ten years earlier than among other people. Operations for gastric ulcer were reported on by Dr. Starlinger, of Vienna, whose records covered 25,600 operations in 85 hospitals. In 14,270 cases Billroth's method with retrocolic gastro-jejunostomy was performed. Relapse was observed in only 0·7 per cent. of the cases and was usually in the anastomosis. To avoid relapse he recommended total removal of the ulcer, the pylorus, and the antrum. A discussion on the dietetic treatment of tuberculosis was introduced by Prof. F. Sauerbruch and Dr. A. Hermannsdorfer who showed numerous patients. It was attested that even desperate cases of tuberculosis were saved by the treatment. Prof. P. Clairmont, of Zürich, confirmed these observations, and there was also a demonstration of cases of lupus successfully treated by the method.

Six Days' Bicycle Race.

Dr. Conrad lately read a paper before the Berlin Medical Society on medical observations during a six days' bicycle race. He said that injuries produced by a fall when travelling at a speed of 60 km. per hour are often less dangerous than those in cyclists going slowly. At high speeds the muscles are keyed up and the possibility of a fall is provided against subconsciously. Among surgical sequels fracture of the articular fossa of the scapula is especially frequent. Constipation is a characteristic feature, and is caused by excessive perspiration producing inspissation of the fæces. Infection of the gluteal skin by friction of the saddle is a common result of prolonged cycling. The heart of professional cyclists is, as a rule, much enlarged.

Constipation in School-children.

Dr. Hinsche, a school medical officer, writing to the *Zeitschrift für Schulgesundheitspflege*, is of opinion that constipation is due less to sedentary occupation than to the impossibility of evacuating the bowels at the usual time and of taking long enough over it. This is especially the case with the children who get up too late in the morning and eat their breakfast in haste so that they have no time for defæcation. The early hour at which school begins in Germany contributes to the rush. In the schools children are generally not allowed to visit the w.c. during the lessons and the condition of the privies, which are sometimes dirty and cold, may discourage their use at other times. Constipation in school-children is not a morbid condition, but is caused by external causes which might easily be removed.

Treatment of Diseases of the Adnexa.

Dr. Loeser reports in the *Centralblatt für Gynäkologie* on his experiences with subcutaneous injections of living gonococci. He has performed 1600 injections in women suffering from chronic gonorrhœa of the cervix and the adnexa, and he says that 76 per cent. were cured within two to six weeks. The chances, he claims, are still better if, during the two first weeks, a small rod of Parthagone or some other silver preparation is introduced into the cervix. This therapy is a specific one, unlike the injections with the vaccines on the market, and it is often useful when other therapeutic measures have proved ineffective. The gonococci used by Loeser came from cases of florid gonorrhœa, and were cultivated in ascites agar.

Dr. Bauer has used fibrolysin in chronic diseases of the adnexa and in post-operative infiltration of the pelvis. It is contra-indicated in acute and subacute inflammation of the true pelvis and in specific inflammation caused by gonorrhœa, tuberculosis, and actinomycosis. Injections of 0·1 g. are made into the muscles every four to ten days, the number of injections being, as a rule, four to ten. He says that in 65 out of 250 cases where the usual treatment had been unsuccessful the infiltration so much decreased under this treatment that the patients no longer complained; in 30 per cent. a considerable improvement was obtained, and in only 5 per cent. did the condition remain unchanged.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 17TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox 324 (last week 462); scarlet fever, 1927; diphtheria, 1210; enteric fever, 65; pneumonia, 919; puerperal fever, 60; puerperal pyrexia, 110; cerebro-spinal fever, 16; acute poliomyelitis, 3; encephalitis lethargica, 10; dysentery, 2; ophthalmia neonatorum, 117. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 20th-21st was as follows:—Small-pox, 513 under treatment, 22 under observation (last week 568 and 22 respectively), scarlet fever, 2016; diphtheria, 2414; enteric fever, 29; measles, 879; whooping-cough, 64; puerperal fever, 23 (plus 16 babies); encephalitis lethargica, 120; poliomyelitis, 1; "other diseases," 20. At St. Margaret's Hospital there were 19 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 96 (36) from measles, 8 (3) from scarlet fever, 27 (3) from whooping-cough, 37 (9) from diphtheria, 44 (10) from diarrhœa and enteritis under two years, and 37 (3) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Manchester and Newcastle-on-Tyne. Fatal cases of measles are still widely scattered; Darlington reported 7, Willesden, Warrington, and Middlesbrough each 4, Croydon, Tottenham, Plymouth, Liverpool, and Stockton-on-Tees each 3. Middlesbrough reported 3 fatal cases of whooping-cough. Seven deaths from diphtheria occurred at Liverpool, 3 at Plymouth. Diarrhœa was credited with 5 deaths at Birmingham, 4 at Liverpool.

The number of stillbirths notified during the week was 333 (corresponding to a rate of 46 per 1000 births), including 56 in London.

A SHROPSHIRE COTTAGE HOSPITAL.—Lord Bridgeman recently performed the opening ceremony of the Annabelle, Lady Boughey Hospital at Newport, Salop. The lady whom it commemorates, and who died in 1914, was the wife of Sir Thomas Fletcher Boughey, of Aqualate Hill, Newport, the eldest of five brothers who held the baronetcy in succession between 1880 and 1921. She bequeathed a sum of £15,000 for the establishment of the hospital, which has been increased by accumulations to £27,000. The building, which has cost £15,000, consists of two blocks, a fully equipped theatre, and an X ray department.

GENERAL MEDICAL COUNCIL.

PRESIDENT'S ADDRESS.

AT the opening of the one hundred and thirty-first session of the Council on May 27th, Sir Donald MacAlister, the President, referred to the death, since their last meeting, of Principal John Yule Mackay, for many years chairman of the Education Committee. "His eminence as a scientific anatomist," he said, "and his experienced capacity as an educational administrator, gave weight and distinction to his often laborious contributions to our proceedings." Mr. Samuel Osborn had resigned his membership after five years' tenure as the representative of the Apothecaries' Society of London, his place being taken by Lieut.-Colonel Charles Thomas Samman.

Indian Medical Degrees.

"The position," said Sir Donald, "which I outlined in my address last November, with regard to Indian qualifications, was not modified by any action taken by the authorities prior to Feb. 24th of this year. The Executive Committee, to whom by the standing orders is delegated the statutory responsibility of recognising overseas diplomas, and so of guaranteeing that every holder thereof possesses the requisite knowledge and skill for the efficient practice of medicine, surgery, and midwifery in this country, felt that the authoritative information placed at its disposal by the Indian authorities was inadequate and defective. The Committee was, in fact, no longer in a position to give this country the guarantee of sufficiency required by law. Accordingly, the conditional recognition which since 1922 had been granted until February, 1930, to certain Indian medical degrees, in the hope that a satisfactory method of official standardisation and guarantee might in the meantime be brought into operation, lapsed on non-fulfilment of the conditions laid down. Until, therefore, a central body, such as the proposed All-India Medical Council, is established by Indian legislation, and is empowered to control and pronounce upon provincial medical qualifications and standards in India, the diplomas referred to, while they may be held to meet the local needs of India itself, will not be registrable here as conforming with the requirements of practice at home.

"This decision was reluctantly but inevitably arrived at, after much patient and sympathetic consideration of present difficulties in India. It was duly transmitted to the Secretary of State for India and the Indian Government; but no further official communication on the subject has been received. It is, however, understood that steps towards central legislation will not be undertaken before, at earliest, the session of Assembly in the autumn.

"The Registrar," he added, "has drawn up, from the minutes of the Council since 1921, a memorandum setting forth the successive steps in the long-drawn-out negotiations with the Indian authorities that have led up to the present position."

Privileges of Foreign Practitioners.

The Council had been asked by the Foreign Office, through the Privy Council, for information regarding the rules governing the privileges of foreign practititoners, not registered in our register, in respect of practice among patients in hospitals established for the treatment of foreigners in this country. The question had arisen whether any such privileges might be extended to British practitioners practising in hospitals established in France for the treatment of British subjects. The law, said the President, is contained in Section 6 of the amending Medical Act, 1859, and is as follows:—

> Nothing in the said Act (Medical Act, 1858) contained shall prevent any person not a British subject who shall have obtained from any foreign university a degree or diploma of doctor in medicine, and who shall have passed the regular examinations entitling him to practise medicine in his own country, from being and acting as the resident physician or medical officer of any hospital established exclusively for the relief of foreigners in sickness: provided always, that such person is engaged in no medical practice except as such resident physician or medical officer.

The French authorities, it is understood, are considering the subject, with a view to an agreement to confer corresponding privileges on British practitioners in relation to hospitals for the treatment of British subjects in France. The terms of such an agreement have been drafted with the assistance of the officers of the Council.

Pharmacopœia.

The Pharmacopœia Committee would report on the progress of the work of revision undertaken by the Pharmacopœia Commission. The preparation of a revised text was in an advanced state; but in view of the considerable amount of new matter, in relation, for example, to biological methods of testing under the Therapeutic Substances Act, and otherwise, it appeared unlikely that the new Pharmacopœia would be ready for publication before the end of this year. The Commission and its Committees are, said the President, diligent in their devotion to the tasks assigned to them, and with their chairman, Dr. Beddard, deserve the grateful acknowledgments of the Council. The Privy Council have forwarded the text of the International Agreement respecting the pharmacopœial unification of potent remedies, drafted by the Brussels Conference of 1925, and approved by the Council subject to certain reserves. The text has been communicated to the Pharmacopœia Commission for its guidance.

Examinations.

The cycle of inspections of final examinations was now being carried out continuously by Dr. Wardrop Griffith, Mr. Farquhar MacRae, and Dr. Fairbairn. Reports on a number of licensing bodies had already been received by the Examination Committee, and would in due course be submitted to the Council for transmission to the Privy Council. Visitations of particular professional examinations by members of the Council had taken place, and the visitors' reports were under consideration by the Examination Committee. It appeared that the complex subject comprehending materia medica, pharmacy, pharmacology, and therapeutics, was very variously dealt with by different licensing bodies. "The time seems to have come for considering," said Sir Donald, "whether greater uniformity in the systematic instruction in methods of treatment, medicinal and other, has not become desirable and practicable." A report on the subject was to be presented at the present session.

Preventive medicine as a part of the medical curriculum had been occupying the attention of the Committee, and much valuable information on the place given to it by the medical schools and licensing bodies had been gathered from the visitors' reports. Here, also, the great variety of emphasis assigned to the subject in different quarters seemed to call for serious consideration. The Council of the Society of Medical Officers of Health had presented to the Council a careful and detailed report on the matter from an influential committee appointed by them, and this had been referred to the Education and Examination Committees, in the expectation that they would find it of assistance in framing conclusions for submission to the Council.

The Education Committee had further considered the question of the methods in use for the teaching of the applications of the pre-clinical subjects, chemistry, physics, biology, &c., during the later (clinical) years of the curriculum. Fuller and more detailed information than was available last November had been gathered, and their conclusions would be reported pending the completion of the cycle of inspections.

Registration of Foreign Students.

The Committee had also had before it the question of the ascertainment and attestation of the certificates presented by applicants for registration as medical students from foreign countries. These presented difficulties that had, within the last few years, become embarrassing, in view of the very large influx of intending medical students from overseas. In some cases the number of such applicants exceeded those from this country, and it became the more important to ensure that their general educational qualifications were not inferior to those required of our own students, or indeed to those required in their own country, for admission to professional degrees and diplomas. "The question," said Sir Donald, "will call for careful and perhaps expert investigation, and for friendly communication with the overseas authorities concerned."

At the conclusion of his address a vote of thanks to the President was proposed by Sir NORMAN WALKER and seconded by Sir HOLBURT WARING. The Council then passed to the consideration of penal cases.

DENTAL BOARD OF THE UNITED KINGDOM.

THE CHAIRMAN'S ADDRESS.

AT the opening of the eighteenth session of the Board on Wednesday, May 14th, the Chairman, Sir Francis Dyke Acland, delivered an address in which he reviewed the present position of the dental profession mainly from the economic standpoint in a discursive but interesting manner. Dealing with the numerical make-up of the profession he suggested that the rising annual entry to the dental schools was a proof that under the Board the profession had become more attractive, and speaking as layman he suggested that statistics were against what he termed the argument of the open door. He contemplated a cessation to the dislike of recent legislation manifested by the public, who, from a natural antipathy to privileged callings, regretted the day when "anyone, however poor, could become a dentist; he had only to take up a forceps and start." The Chairman believed that although the transition period was hardly yet over the general public was becoming more accustomed to regard the dental profession as resembling other professions—namely, privileged for the public good, while the bursary scheme furnished a reply to the difficulty of enabling the poor man to become a dentist.

On the question of whether the figure of 14,000 dentists, at which it was proposed to maintain the register, was high enough, the chairman pointed out that as health services developed there should be so much the less dentistry required as general health conditions improved. He pointed out, further, that when a man works as a school dentist or in a clinic the overhead charges which a dentist must carry whenever he is not working are largely eliminated, and he can afford to do more work for less money and will do more work in less time than a dentist in private work. If this can occur in a clinic because the patients are arranged to suit the dentist's time rather than the public convenience, it followed that the extent to which dentistry is carried on in clinics will be related to the number of dentists needed.

Sir Francis concluded his address with some general remarks on the present and probable future position of dentistry as a benefit under health insurance, laying stress on the need for dental treatment, especially between the ages of 16 and 19. He compared the present dental benefit scheme to rain, saying, "One has rainy periods and less rainy periods, fine days and wet days; rain may be a deluge or a sprinkle, it may do great good or none, and it never really comes when one wants it most. Each point of comparison can be made good—rainy periods and less rainy periods—because though there are so many millions entitled to dental benefit at one date, there is, I think, no certainty that there will be the same number entitled to it at another. Fine days and wet days because the scheme of dental benefit is full of gaps, for some societies give no benefit at all and never have done. The rain varies in intensity, and here, though the analogy is perhaps weak, it still holds good, for some societies adopt one scale, some another, a matter which has caused great feeling and friction. Rain may do great good or none—so may the dental benefit scheme, for unless the insured person can pay his share of the estimate the whole scheme is nugatory. And rain never comes when I want it most, nor does dental treatment which I want most between 16 and 19. There are five things, three of which it seems possible to put right fairly quickly and the other two can be got right some day if we clearly see the present facts as evils and help to get them remedied . . . If those now negotiating about insurance practice can help to secure that societies shall always provide benefit, that all societies shall provide benefit, and that the benefit shall be on a uniform scale, they will have done three good things and they will deserve well of the public and of the profession, and in this connexion there can surely be no distinction between the two. Then two things remain, and the first is, how to help those who at present cannot afford their share, and I believe that in some places people would save if a saving system were organised, and slightly helped. The second point is that from the point of view of public health we want to shorten the gaps in people's lives during which dental treatment depends not on design but chance, which means that there generally isn't any. These gaps are obvious, the period under school age, the period after school age and before insurance begins, and the waiting period after insurance begins before there is any dental benefit. Looking at the matter as a whole, things are improving for, with the extension of the school age, the second gap will be shortened. But I am dealing now with the last period. I believe it has recently been shortened from five years to three, which is splendid. But if I pay an insurance premium for fire, and my house burns down next day, I get paid, provided I did not set it alight. And though I know, of course, that the scheme of health insurance is utterly different from that of fire or life insurance, it should not be beyond the wit of man to prevent the principles upon which it is built from operating permanently as defects."

UNIVERSITY OF MANCHESTER.—From May 22nd to 24th this university celebrated the eightieth anniversary of its foundation as Owens College and the jubilee of its foundation as the Victoria University of Manchester. On May 23rd honorary degrees were conferred, amongst others, on Dr. J. Lorrain Smith, F.R.S., professor of pathology in the University of Edinburgh, who has for several years been professor of that subject at Manchester.

MIDDLESEX HOSPITAL CLUB.—This club, which held its annual meeting last week, was founded many years ago with the idea of arranging reunions. An annual subscription is paid by the members with a view to building up a fund which can be used to relieve old Middlesex men in distressed circumstances or to assist in any scheme for the benefit of the hospital or medical school. At the last meeting a further sum of £250 was voted for a squash racquets court for the residents.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—The annual meeting of this Fund for the purpose of receiving the accounts and reports was held at St. James's Palace on May 27th, when the Prince of Wales, who presided, read a message from the King, expressing his pleasure at the results of the Thankoffering Fund and the gifts received from Sir Otto Beit and Mr. Roger Parr, which had enabled the Fund to lend a large supply of radium to hospitals. The activities of the Fund during 1929 were fully described at the meeting on December 14th, which was reported in our columns at the time (THE LANCET, 1929, ii., 1355).

Correspondence.

"Audi alteram partem."

THE CAUSATION OF ECLAMPSIA.

To the Editor of THE LANCET.

SIR,—I have read Dr. G. W. Theobald's paper in your last issue (p. 1115) with interest. It is gratifying to find that the auto-intoxication theory of eclampsia is making such progress. Some amendment, however, seems necessary to Dr. Theobald's argument. May I deal with a few points?

Dr. Theobald believes that the poison comes from the gut. It is absorbed by the blood and passes to the liver. In order that it may affect the individual a defective liver must be postulated; and this, as Dr. Theobald admits, exists. But, according to him, the fits are not due, certainly or only, to this toxin; "the fits," he says, "are probably caused by a sudden drop in the level of the blood-sugar associated with a hypocalcæmia"—that is, I take it, a result of a failing liver per se. Dr. Theobald indeed adds that the fits may result from "hæmorrhages into, or œdema of the brain." But eclampsia either is due to toxins absorbed from the gut which enter the general circulation unchanged or insufficiently changed, or it is not.

The next point concerns the renal state. We know quite well that if an Eck's fistula be performed in the dog and the animal be given meat, convulsions appear, even though the kidneys are normal. Even Dr. Theobald, I suspect, cannot think that however changed becomes the liver in women about to become eclamptic, the blood can rush through that organ at such a rate or in such a manner as to produce a condition comparable with that determined by an Eck's fistula in the laboratory. It is difficult to believe that in the pregnant woman, however hard she works or however much she eat (unless she vomit persistently) the liver becomes unable in any degree whatever to deal with the toxins absorbed from the gut. Thus, to explain the effect of toxins in the general blood produced by this cause, one must postulate that the kidneys are also inefficient. But Dr. Theobald states that "it is abundantly clear that the kidneys are not concerned in the ætiology of eclampsia." That does not seem consonant with the opinion of the majority of observers. It is not a question of albumin being in the urine; albuminuria matters little, what matters is the excretion of toxins or waste products; not only those absorbed from the gut, but those produced by other parts of the organism, and which passing either at once or later the liver guard insufficiently changed must affect the general well-being unless excreted sufficiently quickly by the kidneys.

The third point concerns the cause of the liver defection, clearly the key to the problem. "The liver," says Dr. Theobald, "carrying out metabolic functions for both mother and fœtus and overwhelmed by an excess of toxins, fails. . ." In parenthesis, we may well ask why the kidneys, concerned also with the increased metabolism, should not also fail. Apart from that, why does the liver fail? Is it simply the result of overwork? Such an idea, even though in pregnancy an increased work for the liver should be in operation for some time, is difficult to accept. Why should not the liver hypertrophy to meet the increased demands, as Herring has stated it does in the rat? Is it to be believed that in women the liver cannot somehow make itself capable of bearing the increased burdens laid on it during pregnancy, provided its blood-supply be adequate? The answer seems supplied by the relative infrequence of eclampsia in multiparæ. The condition in primigravidæ, however, is different. The increased tautness of her abdominal wall, says Dr. Theobald, "causes greater embarrassment to the intestines." The increased embarrassment of the intestines causes more toxins to be produced and more to be absorbed; and it is because of the increased embarrassment of the intestines that the liver becomes overloaded with work (Theobald). But, surely, an increased tension of the abdominal wall in primigravidæ, serious enough to embarrass the intestines, must at the same time embarrass the liver and even the kidneys. In that case, if the woman continue to be active and to eat, it is not surprising that toxins should enter the general circulation and cause morbid manifestations.

Even Dr. Theobald's explanation demands that the pressure within the abdomen is increased. But Dr. Theobald has burned his boats. In a previous paper he has stated that the intra-abdominal pressure is not increased in pregnancy.[1] How, then, can he believe that the intestines are seriously embarrassed in primigravidæ, in virtue of the "bulk" of the uterus and the tautness of the abdominal wall? Dr. Theobald believes that the intra-abdominal pressure is (? always) a little less than that of the atmosphere; but if that were so, the erect posture would not be possible.

I am, Sir, yours faithfully,

R. H. PARAMORE, F.R.C.S. Eng.

Rugby, May 25th, 1930.

To the Editor of THE LANCET.

SIR,—I am in agreement with Dr. Theobald's thesis that eclampsia arises from intestinal toxæmia, with damage to liver and often kidneys; disturbance of the blood calcium and sugar content; the strain of pregnancy on the detoxicating mechanism of the liver, together with the demand by the fœtus for calcium leading to a condition that ends (or may end) in convulsions and often death. I would like briefly to refer to a few special points: (*a*) The high incidence of eclampsia in Glasgow. (*b*) Seasonal incidence. Although I am sure that cosmic and telluric influences have a great bearing on the health of our bodies, I do not find that these cases occur only (or chiefly) in the cold season. (*c*) Why are the inhabitants of South China, Siam, &c., free from pregnancy toxæmias? During a residence of eight years in charge of a hospital for the Chinese I never saw one; and yet they have as unhealthy gastro-intestinal tracts as could be found anywhere from pyorrhœa to helminthic-infected intestines. Is it diet? I do not recall hearing of pregnancy toxæmias or eclampsias occurring in European (meat-eating) women in the East. Is it the absence of sunlight that depresses metabolism and detoxicating mechanism? Osler says that tetany is epidemic in the dark winter months in Norway. (*d*) In the defensive mechanism I include the parathyroid glands. (*e*) The view that eclampsia is intestinal hepatic toxæmia plus the added strain on the mother's detoxicating resources clarifies things enormously. I have noticed the occurrence, at certain times of the year, of a run of cases of acidosis, cyclical vomiting, asthma, and digestive disturbances; and at the same time, a run of acute appendices, gall-bladder infections, perforated ulcers, toxæmias of pregnancy, and eclampsias. The urinary findings are often similar, except that the evidences of liver and kidney disturbance may be more in evidence in the latter. It was these recurrent findings that led me to recognise the basal unity of the different conditions. It is said that eclampsia is only found associated with pregnancy. If it is a breakdown in the defensive barrier to intestinal toxins, with injury to liver cells (and kidney cells) due to calcium deficiency and hypoglycæmia, such a condition might conceivably arise apart from pregnancy.—I am, Sir, yours faithfully,

R. CHALMERS, M.D., F.R.C.S.E.

Darlington, May 24th, 1930.

THE MECHANISM OF PULMONARY COLLAPSE.

To the Editor of THE LANCET.

SIR,—In a letter which you published in your issue of March 1st (p. 482) I discussed the causes of non-collapse of the lung when laid bare by external chest wounds which do not pierce the visceral pleura. An

[1] Theobald: Pressure Caused by Abdominal Tumours. THE LANCET, 1930, i., 904.

illustrative example has come to my notice. On p. 149 of "All Quiet on the Western Front," describing an event from the German side in the recent war, it is stated "Westhus drags off with a great wound in his back through which the lung pulses at every breath." I should be grateful if any of your readers could cite, from their own experience, similar cases showing that the freely exposed lung remains distended and does not collapse.

I am, Sir, yours faithfully,

P. WATSON-WILLIAMS.

Clifton, Bristol, May 21st, 1930.

THE STERILISATION OF HYPODERMIC NEEDLES.

To the Editor of THE LANCET.

SIR,—The annotation on broken hypodermic needles in your issue of May 17th opens up the unsatisfactory question of the sterilisation and storage of hypodermic outfits in general. Correspondence on this subject would probably be both interesting and instructive.

If steel hypodermic needles are sterilised in olive oil at its boiling point, and, after use, washed through with two changes each of distilled water, surgical spirit and ether, impelled in an outward direction by means of the syringe, being subsequently dried by air similarly impelled, they will not rust or block, nor, barring accidents, do they seem to get blunt, whilst the ease and painlessness of the injection, owing to the lubrication in itself repays any possible extra trouble.

Such needles can either be stored in the oil or lightly oiled and stored dry. I have in my possession needles treated in this manner which, although at a mild estimate used more than 50 times each, appear as good and bright as ever, the only part showing wear being the plating of the holder, scratched from frequent manipulation with forceps. It is of interest to note that the tedious process of searching for, picking up, and inserting the tiny wire stilette appears unnecessary in this method. For obvious reasons the oil-sterilised needles should not be used for drawing the solution into the syringe, this duty being best performed by a platinum-iridium needle of fairly wide bore, kept for the purpose only and sterilised by flaming. A substitute which does not possess the unpleasant smell of boiling olive oil would be welcome.

The advice that a fresh needle should be used for each injection is a counsel of perfection, but in a course of 12 injections it would involve an extra cost of from three to nine shillings, or more than twice this sum if stainless steel were used, though prices as quoted in different catalogues vary widely. This is a consideration, in view of the increasing use of hypodermic, intramuscular, and intravenous therapy. Needles showing any discoloration, roughness, or rusting should be discarded forthwith. Breakages usually occur from erosion at the junction of needle and holder, and it is therefore wise to keep the proximal one-eighth of an inch of the needle in view during the process of injection, especially in intramuscular cases, so that extraction with forceps can be carried out in case of accident.

Whatever method is adopted in sterilising syringes and needles, provided sterilisation is effective, and the comfort of the patient and welfare of the outfit taken into consideration, a period of time measured in minutes is necessary. If there is real necessity for extra haste, or circumstances are unfavourable for routine procedures as, for instance, in road or rail accidents, recourse can be had to the Tubunic ampoule syringe (Hoffmann la Roche) or similar principle in which solution, syringe, and needle in sterile condition are so arranged as to be ready for instant use.

I am, Sir, yours faithfully,

Rustington, Sussex, May 23rd, 1930. W. E. WALLER.

TREATMENT OF G.P.I. BY INJECTION OF SULPHUR.

To the Editor of THE LANCET.

SIR,—Dr. Noel G. Harris, in the paper published on p. 1068 of your issue of May 17th, gives a preliminary report on his results with the treatment of general paralysis by injection of sulphur. On the whole, this report is confirmatory of my paper[1] on the therapeutic effect of sulfosin, but I would like to make a couple of comments upon it. Harris prefers to give the injection at about 7 P.M., instead of giving it in the morning as suggested by me. Whether the injection is given in the morning or in the evening makes no difference in its therapeutic effect; so the time of injection is mostly a matter of convenience. I heartily agree with him in emphasising that each patient should be studied as to his individual capacity for responding to the injection pyrexia. I myself have never employed any fixed increase of dosage. I also agree with his statement that the earlier the pyrexial treatment is instituted in cases of general paralysis, the greater is the chance of recovery. The great advantages of sulfosin therapy are that the treatment may be instituted at once and anywhere, since one may always have it at hand ready for use without any preparations—and that it may be given unhesitatingly, because, unlike malaria therapy, it is perfectly safe.

I am, Sir, yours faithfully,

Odense, Denmark, May 22nd, 1930. KNUD SCHROEDER.

BLOOD-PLATELET COUNTS.

To the Editor of THE LANCET.

SIR,—Dr. Willinsky's very interesting researches on the variation of blood-platelet counts, published in your last issue (p. 1126), do not provide any direct evidence in support of Howel Evans's theory of post-operative thrombosis as, unfortunately for his investigations, no case of thrombosis occurred in his series, although the count reached over a million in three of the recorded cases. A. Kristenson, who uses a direct method for counting blood-platelets (*Act. Med. Scand.*, 1928, lxix., 227), reports that in a series of spontaneous venous thrombosis, not associated with operation, clinical signs of thrombosis were preceded by a fall in the count. He refers to the work of E. Normann (*Act. Med. Scand.*, ibid., p. 479), who confirms this fall in the blood-platelet count in post-operative thrombosis. E. Kolozc has pointed out (*Wien. klin. Woch.*, 1928, xli., 1342) that the great difficulty in investigating blood-platelets lies in their easily altered form and structure. Her technique for counts is an indirect method which gives results from 600,000 to 900,000 as normal. She argues that the "fragility" of the blood-platelets is a very variable factor in different diseases, and explains the discrepancy between different methods of counting.

I am, Sir, yours faithfully,

Bristol, May 24th, 1930. FRANK BODMAN.

BACTERIAL BLOOD CULTURES.

To the Editor of THE LANCET.

SIR,—In your issue of April 12th (p. 821) Dr. R. J. V. Pulvertaft condemns the use of sodium citrate and solid media in blood culture work. I have had considerable experience in the Caribbean in culturing the blood of patients suffering from infections with the beta-hæmolytic streptococcus and find both of these agents to be of great value. It has been my custom to take 15 c.cm. of blood into 1·5 c.cm. of 10 per cent. sodium citrate (Merck), and to place 0·5 c.cm., 1·0 c.cm., and 2·0 c.cm. into three

[1] THE LANCET, 1929, ii., 1081.

bottles each containing 40 c.cm. of phosphate glucose broth. The same quantities of blood were mixed with 10 c.cm. of ox heart agar and three plates poured therefrom. The advantage of the solid medium is that it enables one to identify hæmolytic colonies at once, to determine the degree of hæmolysis in the weakest dilution, and to detect contaminating organisms. The use of liquid medium alone increases the time taken to isolate a strain of beta-hæmolytic streptococcus, owing to the fact that the original liquid culture has to be streaked on a blood-agar plate to detect the hæmolytic colonies. It also increases the risk of losing the strain altogether for, if contamination has occurred, the contaminating organism usually outgrows the streptococcus overnight, and the strain can only be saved by the expenditure of considerable time upon the pouring of plates and subsequent fishing of colonies.

I am, Sir, yours faithfully,

ARTHUR W. GRACE.

Pathological Laboratory, Public Hospital, Kingston, Jamaica, B.W.I., May 13th, 1930.

SANATORIUM AND AFTER.

To the Editor of THE LANCET.

SIR,—Reflection on the work done at Papworth, Preston Hall, and other settlements, and on your leader and special article of May 24th, suggests the question: Can nothing further be done for the much greater number of the tuberculous who are, physically or otherwise, unsuitable for such settlements, and who are probably still more unsuitable for life in an ordinary community? Keeping in view the object, as stated by Dr. P. C. Varrier-Jones, "to stamp out tuberculosis," it would seem that to prevent highly infective persons, who are unfit for any employment, and who must be maintained, from returning to their families, to the common lodging-house, or to other unsuitable houses, must be worth a great amount to any population. Any capital invested in such an undertaking, which I believe is quite feasible, would be returned many times over in the saving on treatment, as the numbers infected by exposure would certainly be much diminished. Under any scheme adopted, those segregated would be made reasonably comfortable and content, and the measure of its success would be the extent to which it was able to prevent the return of those who were most dangerous, from the public health point of view, to their old mode of life.

I am, Sir, yours faithfully,

WALTER CRANE,
Principal Resident Medical Officer, Fazakerley Sanatorium, Liverpool.

May 27th, 1930.

ROYAL MEDICAL BENEVOLENT FUND.—At a recent meeting of the committee 49 grants were voted amounting to £1025. The following were some of the cases helped:—

Widow, aged 47, of M.R.C.S. who died in February, at the age of 46 leaving his widow and two boys, aged 16 and 13. The widow expects to have an income of £100 a year. The Fund has undertaken to pay the school fees and maintenance of the two boys for this term; this will mean an expenditure of £42. This grant will relieve the widow from immediate anxiety and give her time to look for employment herself, which she hopes to find, for she is a fully trained nurse. The elder boy of 16 will leave school at the end of this term and find employment.

M.R.C.S., aged 75; widower; has been an assistant for the last eleven years, but has recently had to retire owing to defective hearing and impaired eyesight. He is now living with his step-son, upon whom he has no direct claim. The step-son is a country clergyman and without means. Applicant's only income is the old age pension. Voted £40.

M.R.C.S., aged 60, with wife and child aged 6. Had to give up practice in 1928 owing to paralysis. He has a pension for incurables of £20 which is his only income; his wife has £130 a year. Voted £40.

Widow of L.R.C.P. & S., aged 76. Has an Epsom pension of £40 and old age pension of £26. Fund voted £25 to bring the total income to £91 a year.

Subscriptions and donations should be sent to the Hon Treasurer, 11, Chandos-street, Cavendish-square, London, W.

Obituary.

FRANK RICHARDSON BLAXALL, M.D. LOND., D.P.H. CAMB.,

DIRECTOR OF THE GOVERNMENT LYMPH DEPARTMENT.

WE much regret to record the death on May 24th of Dr. F. R. Blaxall, the head of the Government Lymph Department at Hendon, which occurred in his sixty-fourth year at his residence, Brantwood, Edgware.

Frank Richardson Blaxall studied at University College, London, taking the English conjoint diploma in 1888, and in the same year graduating in medicine in the University of London with honours. Having held the resident posts at the hospital as house physician and obstetric assistant, he became assistant medical superintendent at St. Pancras Infirmary, and for a time held a post with the Ocean Steamship Company. In 1890 he proceeded to the M.D. Lond., he shortly afterwards took the diploma of D.P.H. Cambridge, and in 1893 commenced his real life-work with his appointment as lecturer in bacteriology at the Westminster Hospital medical school. Here he did some work on ringworm in collaboration with Dr. Colcott Fox, then physician to the skin department of the hospital, and this was followed by association with Prof. Allan Macfadyen at the Lister Institute of Preventive Medicine, a paper on Thermophilic Bacteria being published by them in the *Journal of Pathology and Bacteriology* in 1894. Sir Richard Thorne Thorne, then principal medical officer to the Local Government Board, appointed Blaxall as bacteriologist to the Government Vaccine Laboratories while the Royal Commission on Vaccination, appointed in 1889, with Lord Herschell as president, was still sitting. The evidence given before this Commission was issued from time to time in interim reports, and Dr. S. M. Copeman, who had already been working for some three years on the employment of glycerin for the preservation of vaccine lymph, gave evidence before the Commission and was instructed by the Local Government Board to make arrangements with Blaxall to carry out a further series of experiments on the lines indicated in the evidence. At the instance of the Local Government Board, however, before taking up his official duties, Blaxall made an extended tour of the continent with a view to inquiring into the whole subject of vaccination as understood in the various vaccine institutions of other countries, and when he commenced in 1898 what proved to be his official work for the next 32 years of his life he was thoroughly well equipped both in principle and in detail for dealing with the many problems presented by the subject. How faithfully he had dealt with them is well illustrated by the following which we have received from one of his senior colleagues at the Ministry of Health:—

Sir George Buchanan writes: "Combining Local Government Board and Ministry of Health services, Blaxall had for several years been the senior of the medical officers of the central public health department. On the usual official reckoning we should at least have had another year of active work from him, and have found it as invaluable as ever. His was one of the expert posts in the civil service of which little or nothing is heard so long as, and because, it is quietly and efficiently run. When this has been said of Blaxall over duties so liable to meticulous criticism as the supply of vaccine lymph, there can be no higher tribute to his work. The distressing news of his death reaches me abroad and away from references, or I would turn to and quote from records which show how, since the vaccination legislation of 1898, he successfully established the Government Lymph Establishment at Hendon on a system which has given us continuously a supply of vaccine for the public vaccination of the country that can confidently challenge comparisons with any other system in the

world. I would in particular have reckoned up what was involved in the supply of vaccine to the forces during the war, and what that meant in terms of their freedom from small-pox. It is well to recall that Blaxall's work at Hendon was no mere routine duty or mechanical repetition. In everything relating to his subject he was always ready to receive, weigh, try out and apply new knowledge. Within the last few years I had the privilege of attending with him at vaccination conferences at The Hague and Geneva at which almost every aspect of vaccinia and lymph preparation was reviewed by experts of acknowledged authority from many countries. Nothing was more striking than the way in which Blaxall in a short time came to be recognised as master of this whole subject. On one point after another, new as well as old, it was clear that he had thought and worked it out, and was legitimately sure of his facts; his opinion carried more and more weight as the conference came to understand the man and the solid work he represented. To lifelong friends and colleagues in the department, who had learnt how implicitly they could trust in and rely upon him, Blaxall's loss is indeed heavy."

Dr. Blaxall's unexpected death followed on a very short illness. He leaves a widow, three sons, and one daughter. The funeral took place on Tuesday last at the Golder's Green Crematorium.

EDWARD DALTON AGNEW, M.R.C.S. ENG.

Dr. E. D. Agnew died at Bishop's Stortford on May 18th in his seventy-third year. He was the son of the late Major-General Agnew, of the Bengal Staff Corps, and before adopting medicine as a profession he was for a short while a tea-planter in Assam. Eventually he proceeded to the College and Hospital of St. Bartholomew, where he became a regular member of the hospital Rugby XV., and after taking the conjoint qualification, went to Bishop's Stortford in 1890. For nearly 40 years he was actively engaged in general practice there; he retired a little over a year ago, and was in good health until quite recently. Among other appointments held by him was that of medical officer to the Stortford poor-law institution, and until his retirement he was the senior member of the medical staff of the Bishop's Stortford Hospital. "Dr. Agnew," writes a colleague, "was a man singularly upright and direct in character, quite incapable of any sort of pretence or dissimulation, and this led him sometimes to candid expression. He was thorough and careful in his work as in everything he did.

"He had wide interests in sport and literature, and had been a keen cricketer and golfer. He was also much interested in Freemasonry, having been a member of the Stortford 409 Lodge for nearly 40 years. Of strikingly handsome appearance, generous and kind in his disposition, and possessed of great charm, he endeared himself as doctor and friend to a wide circle."

Dr. Agnew leaves a widow and three married daughters.

PRINCE OF WALES'S HOSPITAL.—This Tottenham institution is seriously in need of a new out-patient department. In 1909, when the accommodation was barely adequate, there were 11,600 patients; in 1929, with no additional accommodation, there were 28,700. In the former year the admissions were 628; last year they numbered 2589. Some £15,000, about half the cost of the new department, has been raised.

HULL CONTRIBUTORY SCHEME.—A town's meeting at Hull last week decided to establish a contributory scheme to help to maintain the Royal Infirmary, the Victoria Hospital for Sick Children, the Hospital for Women, and the Hull and Sculcoates Dispensary. Membership is open to workers whose income does not exceed £6 a week, their wives and dependents. The weekly contributions are twopence and threepence. Already 96 per cent. of the employees of the firm of Reckitt have decided to join the scheme.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

MILK AND TUBERCULOSIS.

ON Wednesday, May 21st, the House of Commons went into Committee of Supply on the Civil Service Estimates, Mr. R. YOUNG in the chair.

On a vote of £1,332,310 for the salaries and expenses of the Ministry of Agriculture,

Pure Milk for School-children.

Mr. WINTERTON said the situation was becoming one of great urgency in all milk-producing districts. Before long the prices of milk would be fixed and the farmers would be at a tremendous disadvantage owing to the great surplus of milk which would exist, unless some means were taken to induce a larger consumption. He therefore urged the Minister of Agriculture to accept the suggestion which had been made that steps should be taken during the five months when there was likely to be a glut of milk to give every school-child for five days in the week a supply of milk. He believed that the local authorities would respond to this suggestion and thus help to form a milk habit among children.

Mr. SMITHERS: Would the hon. Member also press that the milk should be free from tuberculosis?

Mr. WINTERTON said that of course he wanted pure milk given to the children, and the research department of the Ministry would be anxious to secure that only the very best milk was supplied. He believed that the farmers would welcome the scheme and would be willing to supply milk at the very lowest rates. He suggested that the Minister should circularise the local authorities, asking them to convey to the education authorities a suggestion on those lines. He also asked whether the research department of the Ministry had looked further into the question of the use of preservatives in cream, and had satisfied themselves whether boric acid in small quantities could be added to cream so that the market could be strengthened for real cream as against some of the artificial cream offered for sale at the present time as British cream. He also urged that the Minister should do everything by speeches in the country and otherwise to encourage the drinking of more milk.

Veterinary Inspection.

Mr. BUXTON (Minister of Agriculture) said that the Ministry was spending something like £50,000 a year on animal disease research. That was not enough; there ought to be expansion, and he hoped that it would be possible to go ahead shortly. Dr. Hastings had raised in the debate in the previous week the question of tuberculosis and milk. Rapid eradication would not be possible without unduly depleting our herds and incurring enormous expense, but a great deal was being done. The Tuberculosis Order of 1925 covered the cases of cows giving tuberculous milk, and also bovine animals infected in a much less dangerous way. The Order required farmers to report cases, but it was sometimes difficult for others than experts to detect tuberculosis, and he had consulted with the Minister of Health on the extension of periodical veterinary inspection. Local authorities had full powers to disinfect farms under the Order. Dr. Hastings had asked whether other cattle were examined. As a general rule that was done; possible "contacts" on the premises were all examined. The working of the Order was illustrated by these figures. Premises examined as a result of reports had declined from 21,000 in 1926 to 18,000 in 1929. The number of animals found infected and slaughtered also declined from 17,000 in 1926 to 15,000 in 1929. In 1929 there were 241,000 animals examined, and at that figure the animals infected within the terms of the Order worked out at 2·8 per cent. of the total—a very different figure from that which was quoted the other day. Cows and heifers giving tuberculous milk numbered only 2600, or 1·4 per cent., of the total number of cattle examined. As regarded the question of the supply of milk in schools, that was not a matter within his responsibility, but he would gladly communicate the suggestion to the President of the Board of Education.

The vote was agreed to by 248 votes to 116.

EDUCATION (SCOTLAND) BILL.

THIRD READING.

On Friday, May 23rd, on the motion for the third reading of the Education (Scotland) Bill,

Major ELLIOT said that he was greatly indebted to the House for allowing the Bill to pass its second reading *sub silentio*. It had been examined by a Standing Committee, and on the whole received favourable consideration. He had received some criticism from hon. friends on both sides of the House for having called the Bill an Education Bill, whereas in their view it was more a matter of public health. He contested that point; it was truly an Education Bill. The experiments from which the Bill arose were conducted with a view to obtaining the maximum possible use of the costly and elaborate educational machinery which the country had set up. In Scotland they had previously attached rather more importance to the training of the mind and not enough perhaps to the training of the body. Those who had received any form of biological training perhaps went to the other extreme and rather emphasised the desirability of a sound body if the sound mind was to function at all. The Bill proposed to enable education authorities in Scotland to incur expenditure in supplying milk to the children attending the schools within their areas. From the annual report of the Department of Health in Scotland they learned that the average time occupied in the examination of each child was 7½ minutes. That was the time spent on the survey of the physical fitness of each child out of the whole school year. Within that school year they were informed only one-third of the school population underwent systematic medical inspection, and accordingly they might take it that the 7½ minutes of inspection had to suffice for the child for three years. He did not think anyone could regard that state of affairs as satisfactory, and it was one of the things which had weighed with him and the former Secretary for Scotland in desiring that education should be merged in one general authority responsible for health, education, and open spaces. In the course of the report to which he had already referred was recounted a somewhat melancholy tale showing that 2·4 per cent. of the children examined were found to be suffering from anæmia and 2·5 per cent. from tuberculosis in one form or another. The Bill as introduced made no provision with regard to the quality of the milk to be provided, and the Standing Committee, after a good deal of debate, decided to make a change in that respect, and inserted a proviso that the milk to be supplied should be Certified milk, or failing that milk of the best grade available in the area. Undoubtedly that might lead to certain difficulties, and to a certain increase of expense to the local authorities, but the proviso raised the whole question of whether milk of a certain degree of infection was so bad that it should not be supplied at all, or whether the milk must be milk from tuberculin-tested cattle. He pleaded strongly for the passage of the Bill even with the insertion of this proviso. The question of tuberculous herds, and the possible transmission of tuberculosis to children through milk, was the subject of considerable controversy at present. Bovine tuberculosis was understood to cause the deaths of about 3000 children per annum in this country, and bovine tuberculosis among herds had undoubtedly caused reluctance on the part of doctors to prescribe, and on the part of the population to consume, milk which was in spite of all those difficulties the finest food and the only food which had been worked out by nature for growing animals, either the young of cows or the young of the human race. The difficulty was the relatively small number of herds where Certified or even Grade A tuberculin-tested milk could be supplied. There were 101 herds in Scotland licensed for the sale of tuberculin-free milk, whereas the total number of milch cows in Scotland was over 450,000. He did not think there was any doubt that if they could persuade local authorities to adopt this Bill the health of the school-children in Scotland would be improved.

Mr. JOHNSTON (Under Secretary of State for Scotland) said as far as he knew the object of this Bill was desired by all the large education authorities in Scotland, and Glasgow had in preparation for the measure intimated that it had a scheme ready. It was an optional Bill. Experiments had shown the urgent necessity on physical grounds for such a Bill. The Government earnestly desired that the House should give a third reading to the Bill, and give the local authorities these powers at the earliest possible moment.

Rejection of the Bill Moved.

Mr. R. W. SMITH moved the rejection of the Bill. He said certain children might have benefited by the milk supplied, but other tests had been made with regard to the conditions under which children were educated, and it had been found that children educated in schools where there was a large amount of sunlight, or in open-air schools, had improved. Therefore if they were to have a Bill covering the question of milk as affecting the health of children they ought also to deal with drugs, medicines, or foods which children needed. There was a complaint from which children suffered called acidosia which might ruin a child's life, and in such cases milk was the very worst thing possible. Why should the unfortunate children who required glucose, or any other substance, not get it also at the expense of the State? As the Bill stood education authorities, if they could not obtain pasteurised or Certified milk, might supply the best milk obtainable in the district. It was admitted that in a very large number of districts in Scotland it would be impossible to get a large enough supply of even pasteurised milk, and it seemed a very serious thing to say that they might supply children with milk which would probably contain the germs of tuberculosis.

Major ELLIOT pointed out that the scheme had to be approved by the Scottish Education Department and the Department of Health in Scotland, and he would have thought that that would have satisfied Mr. Smith that the danger of children getting actively infected milk would be obviated.

Mr. SMITH said there would be no safeguard at all, because those who spoke for the Department of Health had stated that it would be impossible to work the Bill in many areas if Certified or pasteurised milk had to be supplied, and that probably meant that in certain cases permission would be given for non-certified milk to be provided.

Mr. C. WILLIAMS seconded the motion for the rejection of the Bill, which he described as a muddle-headed measure.

Mr. BOOTHBY said those who had backed the Bill regarded it as a very beneficial measure of reform which was likely to benefit not merely the school-children, but also the farming community and agriculture generally. He hoped that later they would see a scheme for making the consumption of milk by school-children compulsory and carried through at the expense of the education authorities.

The Need of Tubercle-free Milk.

Mr. MACQUISTEN said he was very sorry that the Bill did not insist on milk absolutely free from tuberculosis. It was said that there would not be a sufficient supply, but he thought that in a very short time there would have been a sufficient supply. The population of Scotland was built up very largely for generations on milk and oatmeal. It was a pity there was no provision for the supply with the milk of decent brose, which was the best possible antiseptic for the lactic acid in the milk. Dr. Murray, who was formerly Member of Parliament for the Western Isles, told him that when he was a young man in Stornoway one could not find even people over 70 years of age with dental caries. That was because they ate raw oatcake with the milk. He remembered reading the evidence of a Scottish surgeon, given at a health inquiry, in which he said one of the reasons for there being more dental caries in Scotland than in England was that the Scottish children got milk for their meals, whereas English children got beer. So far from this proposal being a burden on the local rates, if school-children were in a better condition of bodily health that in a sense would ultimately prove an economy. He believed that the giving of this sustenance, which after all would not be very costly, would improve not only the physical condition of the children but their mental faculties, and their capacity for benefiting from the education given to them.

The Bill was read the third time and passed.

INDIAN MEDICAL DEGREES.

On Monday, May 26th, the House went into Committee of Supply on the Civil Service Estimates. Mr. R. YOUNG was in the chair.

On a vote for the salaries and expenses of the India Office,

Mr. WEDGWOOD BENN (Secretary of State for India) referred to the question of Indian medical degrees. He said that the Committee knew that the General Medical Council after considerable discussion—the point had been raised many times in recent years—decided that unless an officer, called the Commissioner of Medical Qualifications and Standards, was appointed—Colonel Needham had been designated for the post—to appraise, so to speak, the standard of the medical education given in the various Indian medical colleges, they would be unable to continue to recognise the Indian medical degrees. Owing to circumstances which he need not further describe that appointment was never completed, and the result was that the General Medical Council felt compelled to withdraw their recognition of Indian medical degrees. That was a most unfortunate thing both for the Indians and the British. The problem was urgent, and was being urgently studied by the Government in the hope that by the creation of some All-Indian medical organisation some sort of authority might be created which, manned and staffed in India, might be able to give those guarantees which the General Medical Council considered requisite before it could give

recognition to the Indian medical degrees. That something might be arranged at the earliest possible moment was in the interests of both India and this country alike.

HOUSE OF COMMONS.

WEDNESDAY, MAY 21ST.

Cargo of Narcotics for the Far East.

Mr. D. G. SOMERVILLE asked the Secretary of State for Foreign Affairs whether he could make any further statement as to the ownership, destination, and contents of the ship which recently sailed from the Persian Gulf for the Far East with a large cargo of narcotics.—Mr. A. HENDERSON replied: The ship in question is reported to be a Chinese vessel and to have sailed from Bushire on April 27th with a cargo of 2308 cases of unlicensed opium declared for Vladivostock.

THURSDAY, MAY 22ND.

Improvements at Bracebridge Mental Hospital.

Lieut.-Colonel HENEAGE asked the Minister of Health whether his attention had been called to the delay in authorising the alterations and improvements required by the visiting committee to the Bracebridge Mental Hospital; whether he was aware that the committee was being constantly referred from one Government department to another; and whether he could see his way to obviate the present delay in the interests of patients.—Mr. GREENWOOD replied: The proposals have required the consideration of the Ministry of Health and the Electricity Commissioners as to the power plant at the hospital. I will endeavour to ensure that an early decision is given.

Sewage Works Nuisance at Hanwell.

Major SALMON asked the Minister of Health if he was aware that the residents in some 300 houses on the Elthorne Heights Estate, Hanwell, Middlesex, suffered inconvenience from the odours which emanated from the sewage disposal works in the vicinity; whether his attention had been called to the proposal of the Corporation of Ealing to expend the sum of £11,500 on the enlargement of such sewage disposal works; and what steps, if any, he proposed to take to ensure that the nuisance at present arising from the works should be permanently eliminated in the interests of the health of the residents.—Mr. GREENWOOD replied: I have received complaints. The town council have applied for sanction to a loan for the improvement of the works, and inquiry into the application was recently held by one of my inspectors. On receipt of his report I will consider the appropriate steps to be taken.

Mental Treatment Bill.

Mr. WINTERTON asked the Minister of Health whether with regard to the two medical commissioners to be appointed under the terms of the Mental Treatment Bill he would favourably consider the suggestion that one of them should be a woman.—Mr. GREENWOOD replied: The Mental Treatment Bill proposes that of the five senior commissioners who are to compose the Board of Control, one shall be a woman. In the appointment of the two medical senior commissioners, it will be necessary to have regard primarily to their qualifications for advising upon the treatment of mental disorders; and I cannot give any undertaking that one of the medical commissioners shall be a woman.

Home Office and Anthracosis.

Dr. JOHN WILLIAMS asked the Home Secretary (1) whether his department had published reports of cases of anthracosis; and whether a list of persons declared to have suffered from this complaint was available at the Home Office; and (2) whether he had any evidence that anthracosis was due to special conditions obtaining in the anthracite coalfield; and whether he was prepared to include it in the list of occupational diseases which could be scheduled for the purposes of the Workmen's Compensation Act.—Mr. SHORT (Under Secretary for the Home Office) replied: The reply to both parts of my hon. friend's first question is in the negative. The investigation of the effects of coal dust on the lungs has been referred to the expert Committee on the Industrial Pulmonary Diseases, which was recently set up at my right hon. friend's request by the Medical Research Council, but it has yet to be established that the condition of the lungs described as anthracosis is the cause of disablement, and meanwhile it would not be possible to bring it within the scope of the Workmen's Compensation Act. I am advised that there is some evidence of special changes in the lungs due to the conditions in the anthracite coal field, but this is a point which will need further investigation.

Home Office and Anthrax.

Mr. DUKES asked the Home Secretary if his attention had been directed to the following fatal cases of anthrax in the Liverpool, Runcorn, and Warrington district: Walter Pritchard, 16, Ellesmere-street, Warrington, January, 1929; William Ronald Williamson, Runcorn, February, 1929; Thomas Burden, July, 1929; Ernest Hindley, Runcorn, March, 1930; Richard Andrews, 35, Fothergill-street, Warrington, April 12th, 1930; and Mary Dawbarn, 3, Glazebrook-street, Warrington, April 20th, 1930; and whether, in view of the frequency of these cases, he would set up a committee of inquiry with a view to having this disease treated more expeditiously than at present.—Mr. SHORT replied: The cases mentioned in the question were all reported to the Factory Department and carefully examined, and my right hon. friend is advised that, while in some of them the seriousness of the case may have been aggravated by some delay in recognising the disease, treatment was given without delay in every case as soon as it was recognised to be anthrax. It is, of course, most important that cases of anthrax should be recognised as well as treated without delay, and various steps have been taken by the Factory Department from time to time with this object. For example, a large placard indicating symptoms and precautions and the urgency of medical examination where infection is suspected has been prescribed for exhibition at the places of work; and a small card on similar lines is now being prepared, which the workman can keep by him and show to the doctor or hospital authorities, to indicate that his employment involves risk of anthrax. Further, special steps have recently been taken as regards the tanning industry in which my right hon. friend understands all but one of the cases referred to in the question occurred. The senior medical inspector recently addressed a circular to the hospitals in districts where cases have occurred drawing attention to the risk among persons handling hides and skins, and the importance of being on the look-out for possible cases among patients presenting themselves at the institution. Again, in a recent Home Office circular to tannery occupiers the importance of prompt diagnosis and treatment was specially mentioned, and they were urged to review their arrangements for securing this and to get into touch with local hospitals where necessary. My right hon. friend does not think that the appointment of a committee of inquiry would be likely to carry matters any further, but the subject will continue to receive close attention, and if my hon. friend has any particular suggestion to make my right hon. friend will be very glad to consider it.

MONDAY, MAY 26TH.

Cattle and Tuberculosis.

Dr. HASTINGS asked the Minister of Agriculture if he could say, having regard to the fact that of the 241,000 bovine animals examined during 1929 under the Tuberculosis Order, 1925, 2·8 per cent. only were condemned to be slaughtered, whether all the remaining 97·2 per cent. were entirely free from tuberculosis; and, if not, whether he could give any estimate of the probable number infected.—Mr. BUXTON replied: The total number of animals on premises, on which cases of tuberculosis were reported under the Tuberculosis Order, 1925, during 1929, was 621,396. Of this total 241,252 animals were examined by veterinary inspectors. Of these, 15,732 animals were condemned and slaughtered, representing 2·8 per cent. of the total number of animals on the premises, or 6·5 per cent. of the total number examined. The remainder were not necessarily entirely free from tuberculosis, but they presented no symptoms of a nature to bring them within the scope of the Tuberculosis Order as to compulsory slaughter. As regards the last part of the question there is no information upon which an estimate could be based of the proportion which might be infected.

Pensioners and Sickness Benefit.

Captain CAZALET asked the Minister of Health whether, in view of the fact that men drawing disability pensions and who were members of the National Health Insurance Fund only drew part benefit for sickness, he would take action either by legislation or administration to see that they drew full benefit.—Miss SUSAN LAWRENCE replied: Under the Act, benefit is only reduced in the case of men who are in receipt of a pension from the State at the total disablement rate. The reduction ceases to operate when a man has resumed work, and contributions have been paid for a certain number of weeks. My right hon. friend does not propose to introduce any amending legislation on the subject.

International Congress on Mental Hygiene.

Mr. MANDER asked the Minister of Health whether the Government were officially represented at the International Congress on Mental Hygiene recently held in Washington; if so, by whom; and what report had been received of the proceedings.—Mr. GREENWOOD replied: His Majesty's Government were represented at this congress by Sir Hubert

Bond, a medical commissioner of the Board of Control. Sir Hubert Bond has not yet returned to this country, and no report has yet been received.

Small-pox and Vaccination.

Mr. GROVES asked the Minister of Health which county of England and Wales had had the lowest and which the highest percentage of primary vaccinations to births during the past ten years; and how many cases of small-pox per 1000 of the population had been reported in the counties in question during the same period.—Mr. GREENWOOD replied: During the years 1919 to 1928 inclusive, the counties in England and Wales with the lowest and highest percentage of primary vaccinations to births were Leicestershire and Anglesey respectively. The total number of cases of small-pox notified during the same ten years per 1000 of the average population was 0·63 in Leicestershire (including the county borough of Leicester) and 0·02 in Anglesey.

Remuneration of Public Vaccinators.

Mr. GROVES asked the Minister of Health how many public vaccinators were now paid by salary and how many by fees.—Mr. GREENWOOD replied: On March 31st last, which is the latest date for which complete particulars are at present available, 28 public vaccinators had contracts which provided for payment by salary, and 4293 had contracts which provided for payment by fees.

TUESDAY, MAY 27TH.

Increase in the Population.

Mr. DAY asked the Minister of Health the average annual increase of the population of England and Wales for the years 1927–1928 and 1929.—Mr. GREENWOOD replied: The increase of the population of England and Wales between mid-1927 and mid-1929 is estimated at approximately 317,000, corresponding to an average annual increase of 158,500.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful:—

Surgery.—E. C. Dymond, St. Mary's Hosp.; R. F. T. Finn, St. Bart.'s Hosp.; E. A. Freywirth, Heidelberg; H. G. Hind and J. H. Johnston, St. Bart.'s Hosp.; E. Lethem, Guy's Hosp.; A. Liberis, St. Bart.'s Hosp.; and J. Ross, Toronto and Charing Cross Hosp.

Medicine.—G. P. Charles, Sydney and Westminster Hosp.; A. R. Edwards, Liverpool; J. D. B. Games, St. Bart.'s Hosp.; J. Ross, Toronto and Charing Cross Hosp.; E. M. M. Shaw, Westminster Hosp.; W. H. Willis, Western Reserve University, U.S.A.

Forensic Medicine.—A. Buch, St. Mary's Hosp.; G. T. W. Cashell, King's College Hosp.; T. C. Keble, St. Mary's Hosp.; E. H. W. Lyle, King's College Hosp.; C. G. Nicol, St. Mary's Hosp.; J. Ross, Toronto and Charing Cross Hosp.; C. M. Smith, Edinburgh; A. L. Thomas, Guy's Hosp.; and W. H. Willis, Western Reserve University, U.S.A.

Midwifery.—G. T. W. Cashell, King's College Hosp.; Y. Haig, Paris; J. Ross, Toronto and Charing Cross Hosp.; A. L. Thomas, Guy's Hosp.; and W. H. Willis, Western Reserve University, U.S.A.

The diploma of the society was granted to the following candidates, entitling them to practise medicine, surgery, and Midwifery: A. R. Edwards; J. H. Johnston; A. Liberis; and J. Ross.

BRITISH COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGISTS.—At the annual general meeting of this college, held at the Royal College of Nursing, London, on May 20th, with Prof. W. Blair Bell, the President, in the chair, the result of the election of the council was announced. At the first meeting of the new council held in the afternoon of the same day the officers were elected, and the casual vacancies created by these elections were filled. Dame Louise McIlroy was coöpted for the special purpose of representing women Fellows and Members. The following are the officers and the full council elected:—President: Prof. W. Blair Bell. Vice-Presidents: Dr. J. S. Fairbairn and Prof. J. Munro Kerr. Hon. Treasurer: Mr. Eardley Holland. Hon. Secretary: Prof. W. Fletcher Shaw. Council.—London: Dr. H. Russell Andrews, Dr. T. Watts Eden, Dr. J. S. Fairbairn, Dame Louise McIlroy, and Mr. L. C. Rivett. England and Wales: Prof. A. Donald, Sir Ewen Maclean, Dr. H. Leith Murray, Prof. Miles Phillips, Prof. H. Beckwith Whitehouse, Dr. E. Farquhar Murray, and Dr. Eric Stacey. Scotland: Prof. R. W. Johnstone, Prof. Munro Kerr, Dr. R. A. Lennie, and Dr. W. F. T. Haultain. Ireland: Prof. C. G. Lowry, Dr. Bethel Solomons, and Dr. T. M. Healy.

UNIVERSITY OF LONDON.—At a meeting of the Senate on May 22nd the Dunn Exhibitions in anatomy and physiology for 1930 were awarded to Mr. Abraham Birnbaum, of the London Hospital Medical College.

The degree of D.Sc. in physiology has been conferred on Mr. A. S. J. M. Huggett, of St. Thomas's Hospital Medical School.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—Dr. S. A. Kinnier Wilson will deliver the Morison lectures at the College at 5 P.M. on Monday, Tuesday, and Wednesday, June 2nd to 4th. His subject will be Nervous Semiology.—The Dr. Alexander Black lecture will be given by Dr. David Rorie at 5 P.M. on Friday, the 20th, and will be devoted to Folk Medicine in Scottish Ballad Literature.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—The biennial dinner of this Society was held at the May Fair Hotel, London, on May 22nd, when the President, Dr. G. Carmichael Low, welcomed a large company of members and guests; the latter included Lady Manson, Sir John Rose Bradford, Admiral Gaskell, Lieut.-General Fawcus, Sir Herbert Read, Sir Basil Blackett, Mr. Donald Armour, Col. T. R. St. Johnston, Major F. T. G. Hobday, Dr. N. G. Horner, and Sir Squire Sprigge. After the loyal toasts it was announced from the chair that the Marquis of Reading, who had intended to propose the toast of the evening, was unable to be present, but Dr. Low took the opportunity to point out how extensive and valuable his work in connexion with tropical medicine in India had been during his Viceroyalty, and how enthusiastically that work had been seconded by the late Lady Reading.

Sir John Rose Bradford, who had consented to speak in Lord Reading's place, was, said Dr. Low, the author of researches to which tropical medicine owed a real debt, although his early and special studies might have been somewhat overshadowed by his great general and professional activities. He reminded the audience that Sir John had been until lately senior medical officer to the Colonial Office. Sir John Rose Bradford, in proposing the prosperity of the Society, gave a brief sketch of its progress enumerating the names of the highly distinguished presidents. He pointed out that what it existed to promote should have a peculiarly strong appeal because the study of tropical disease was above all things one where laboratory and clinical work proceeded hand-in-hand. While the objects of medicine were threefold—to cure, to relieve, and to prevent, in tropical medicine, through researches in the laboratory, we had the most direct examples of prevention. But the results of laboratory research, he said, must never blind the physicians of to-day to the extraordinary accuracy and success with which the old clinical workers, possessing none of the modern adjuvants to research, came to accurate conclusions. Speaking as a general physician he desired to regard medicine as a branch of natural history, and in no department of medicine was this fact displayed so accurately as in tropical medicine. Dr. Low in reply told how the Society had been formed at a meeting in the Colonial Office in 1907. In enumerating the presidents, he alluded to the wonderful work of Patrick Manson, Ronald Ross, Leishman, and Bruce, and pointed out that the number of Fellows of the Society had steadily increased as its objects became known and its doors had been thrown open to persons interested, whether medical men or not. But, he said, this success could never have been achieved save through the efforts of the Society's officials, and he described the heavy debt which the Society was under to Dr. C. M. Wenyon, the honorary secretary, and Miss M. Wenyon. He closed by bringing to the notice of the audience the recently issued appeal for subscriptions to take the form of a permanent home for the Society of Tropical Medicine and Hygiene, which would also be a material memorial to Patrick Manson. Towards the object of this appeal the Fellows of the Society themselves had subscribed over £6000, but three times that sum was still required.

The toast of the Guests was proposed by Dr. Manson-Bahr in amusing terms, for he stated that there were 15 of them and although two of them had defaulted the other 13 represented a formidable combination, when he allotted places to them in accordance with football phraseology. He coupled with the toast the name of Sir Herbert Read, who had been private secretary to Joseph Chamberlain when under that great Colonial Secretary the era of tropical medicine commenced, and Admiral Gaskell the medical director of the Navy. Sir Herbert Read, the Ex-Governor of Mauritius, testified, as a result of personal visits to many colonies, to the vital work carried on by the officers of the Colonial Service and workers in hygiene and science in all regions of the world. Admiral Gaskell, in his brief reply permitted himself one political allusion, when he said that a strong Navy was not required for attack but as an insurance against attack, while to be strong the Navy must be healthy. The toast of the Chairman was proposed by Col. W. P. MacArthur.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The branches of this society have unanimously nominated Prof. Harold Kerr, medical officer of health for Newcastle-upon-Tyne, as president for 1930–31. Dr. Kerr will take office in October.

MENTAL AFTER-CARE ASSOCIATION.—The Prince of Wales has promised to preside at the jubilee meeting of this association to be held at the Drapers' Hall, Throgmorton-street, London, E.C., on June 2nd. The other speakers will include Sir Maurice Craig, the treasurer.

LONDON CLINICAL SOCIETY.—The fifth annual Macalister Lecture of this Society will be delivered at the London Temperance Hospital, Hampstead-road, London, N.W., on Tuesday, June 24th, when Sir Robert Armstrong-Jones will take for his subject The Evolution of the Human Mind. The lecture, which will be illustrated by lantern slides is free to all medical practitioners, who are invited to bring friends.

ASTHMA RESEARCH COUNCIL.—There will be a discussion on asthma at a special meeting of the medical advisory committee of this council at 3.30 P.M., on June 5th, at 37, Russell-square, London, W.C. Those desiring to take part in the discussion are asked to give notice to the council at that address.

Sir James Dundas-Grant has been elected an honorary member of the Inter-State Post-Graduate Medical Association of North America.

BRITISH WATERWORKS ASSOCIATION.—The annual general meeting of this association will be held at Liverpool on July 9th. Among the papers to be contributed is one by Prof. J. M. Beattie on the Value of Frequent Tests in the Bacteriological Examination of Water.

ULSTER HOSPITAL FOR CHILDREN AND WOMEN.—The board of management of this Belfast hospital have opened a fund for badly needed extensions to the hospital. Mr. S. T. Irwin has resigned from the senior surgeonship to this hospital, and Mr. Cecil A. Calvert has been appointed assistant surgeon.

BLUE STAR LINE.—A cruise to the Mediterranean at exceptionally low rates will be inaugurated by the Blue Star Line to mark the first anniversary of the company's entry into pleasure cruising. The *Arandora Star*, described in our columns last year (June 15th, p. 1282) will sail on June 18th for a 14-day cruise to Gibraltar, Tangier, Spain, and the Balearic Islands. The fares for this 3500-mile cruise will vary from 24 guineas, which works out at less than 2*d*. a mile inclusive.

MEDICAL WOMEN'S FEDERATION.—The thirteenth annual meeting was held at the Medical Institute, Newcastle-on-Tyne, on May 8th, the President, Dr. Catherine Chisholm, being in the chair. Dr. Jane Walker, as honorary treasurer, reported that the two loan funds administered by the Federation continued to be of great service to young medical women desirous of entering general practice, and that all those who had benefited by assistance were making good. At the council meeting on May 9th Miss Louisa Martindale was elected President of the Federation in succession to Dr. Catherine Chisholm. The business dealt with included discussion of the reports of the Federation's committees on Venereal Disease, Public Health, Psychological Medicine, National Health Insurance, Work of Married Medical Women, the Menopause, and Dysmenorrhœa. It was reported that at the request of the Ministry of Health Committee on Maternal Mortality and Morbidity evidence had been drawn up by a specially appointed committee of the Federation, and had been presented by Dr. Chisholm, Mrs. Ivens-Knowles, and Dr. Adamson. The proposal to exclude women from continuing work at the Birmingham Hospital after marriage was discussed, and the hope was expressed that when ratification of this resolution was due next year a majority of governors of the hospital would see that such a resolution was unnecessary. A member of council reported that as a result of the efforts of the Federation the governing body of a large hospital had rescinded a resolution which would have prevented any woman from having charge of medical and surgical beds, or from becoming assistant or full physician or surgeon when due for promotion. Permission was accorded to the London Association of the Federation to publish the findings of its menstruation committee which has completed an investigation of 6000 cases. It was reported that a new (fifteenth) Association of the Federation had recently been formed by the medical women in Oxford and the district around. The Federation has now a membership of over 1300, having more than trebled its numbers in the last ten years.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, June 2nd.—8 P.M., ODONTOLOGY (at the Royal College of Surgeons, Lincoln's Inn-fields, W.C.). Annual General Meeting: Election of Officers and Council. Demonstration: Sir Frank Colyer will demonstrate on specimens in the Odontological Museum. Casual Communication: Mr. Gerald Harborow: A Complex Odontome. A Histological Report on the Odontome will be given by Mr. J. G. Turner.
WEDNESDAY.—SURGERY. Provincial Meeting at Birmingham.

RESEARCH DEFENCE SOCIETY, 11, Chandos-street, W.
TUESDAY, June 3rd.—3.15 P.M., Annual General Meeting. Mrs. May Mellanby: Diet and Dental Disease: What We have Learned from Animal Experiments. (Stephen Paget Memorial Lecture.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 2nd to SATURDAY, June 7th.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Mon., 6 P.M., Clinical Demonstration in Dermatology, by Dr. S. E. Dore. No fee.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Special M.R.C.P. Lectures at 8.30 P.M., as follows:—Tues., Sir William Willcox: Some Points in Connexion with the Toxic Effects of Lead, Arsenic, Morphine, and Cocaine, &c. Friday, Dr. H. E. Archer: The Fractional Test Meal as an Aid in Diagnosis.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, W.C. Special M.R.C.P. Lecture on Mon. at 4.30 P.M., by Mr. C. L. Gimblett, on General Medical Ophthalmology.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Special Course consisting of Lectures, Demonstrations, Surgical Operations, from 10 A.M., to 1 P.M., daily. Further particulars from the Fellowship of Medicine, 1, Wimpole-street, W.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, June 2nd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations. 4.30 P.M., Dr. J. Browning Alexander: Pneumonia, its Complications and Treatment. (Special Lecture.)
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M., Medical, Surgical, and Children's Diseases Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, June 2nd.—10 A.M., Dr. Dowling: Skin Department. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Simmonds: Surgical Wards.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Dept. 2.30 P.M., Sir Henry Simson: Gynæcological Operations.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. Dr. Scott Pinchin: Medical Out-patients.
THURSDAY.—10 A.M. to 1 P.M., Neurological Department. Demonstration of Fractures. 2 P.M., Medical, Surgical, Eye and Genito-Urinary Departments.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department. 2 P.M., Mr. Sinclair: Operations.
SATURDAY.—9 A.M., Mr. Vlasto: Throat, Nose, and Ear Operations. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Children's Department.
Daily, 10 A.M. to 5 P.M., Medical, Surgical, and Special Out-patients, Operations, Ward Visits, Anæsthetic Courses.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, June 2nd.—12 noon, Dr. Greenfield: Cerebro-spinal Fluid. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Mr. Leslie Paton: Papilloedema.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Cerebral Vascular Disease.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Neurosyphilis.
FRIDAY.—12 noon, Dr. Purdon Martin: Anatomy and Physiology of the Nervous System. 2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Cerebral Tumours in Children.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
WEDNESDAY, June 4th.—5 P.M., Dr. John Cowan: The Fibroses of the Heart. (The St. Cyres Lecture.)

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY, W.
THURSDAY, June 5th.—5 P.M., Prof. G. E. Gask: The Value of Radium in Surgery.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
TUESDAY, June 3rd.—5 p.m., Dr. Sydney Owen: The Care of the New-born Baby.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURE.

TUESDAY, June 3rd.—4.15 P.M., Dr. W. Dyson: Demonstration of Dermatological Cases.

Appointments.

DAVIES, J. Ll., M.B., B.Ch. Camb., F.R.C.S. Eng., has been appointed Honorary Assistant Surgeon to the Children's Hospital, Nottingham.

GIBSON, J. McI., M.D., B.Ch. Belf., D.P.H., Medical Officer of Health for Huddersfield.

LEETE, H. M., M.D., B.S. Durh., D.P.H., Medical Superintendent of the Hull Municipal Hospitals.

WALTON, W. S., M.B., B.S. Durh., D.P.H., Assistant Medical Officer and Port Officer at Plymouth.

Certifying Surgeons under the Factory and Workshop Acts: BLAINE, J. F., M.B., B.Ch. Belf. (Pontypool); and WILLIAMS, J. E. B., L.R.C.P. Lond., M.R.C.S. (Tenbury, Worcester).

Vacancies.

For further information refer to the advertisement columns.

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

All Saints' Hospital, 91, Finchley-road, N.W.—H.S. At rate of £150.

Altrincham General Hospital, Cheshire.—Sen. H.S. Also Jun. H.S. At rate of £150 and £120 respectively.

Aylesbury, Bucks County Council, &c.—Asst. County M.O., &c. £700.

Bath, Royal United Hospital. H.P. £120.

Birmingham, Ear and Throat Hospital, Edmund-street.—H.S. At rate of £150.

Blackburn Royal Infirmary.—4th H.S. £150.

Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.

Bristol, City and County of.—Chief Asst. M.O.H., &c. £800.

Bristol, Clifton Dispensary, Dowry-square.—Res. M.O. £300.

Derbyshire Royal Infirmary.—Asst. H.S. and Cas. O. £150.

Doncaster Royal Infirmary.—2nd H.S. and 3rd H.S. Each at rate of £150.

Dorchester, Dorset County Hospital.—H.S. At rate of £120.

Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110.

Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.

Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.

Gloucestershire Royal Infirmary and Eye Institution.—H.P. and H.S. At rate of £135 and £100 respectively.

Great Yarmouth General Hospital.—H.S. £125.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—H.S., H.P., and Cas. Surg. O. Each at rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. Also H.P. Each at rate of £100.

Hull Royal Infirmary.—H.S. At rate of £150.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Kent Education Committee.—School Medical Inspector. £600. Also Dental Surgeon. £550.

King's College Hospital, Denmark Hill, S.E.—Jun. Urological Surgeon.

Leeds Hospital for Women.—H.S. At rate of £50.

Liverpool Royal Children's Hospital, Myrtle-street.—Res. H.S. At rate of £60.

Liverpool, St. Paul's Eye Hospital.—H.S. At rate of £120.

Liverpool, Smithdown-road Institution.—Res. Asst. M.O. £200.

L.C.C. Public Health Dept. Venereal Diseases Clinic, Whitechapel-road, E.—Chief Asst. M.O. £600. Two Jun. Asst. M.O.'s. Each £350.

London Female Lock Hospital, 283, Harrow-road, W.—H.S. £150.

London Lock Hospital, 91, Dean-street, W.—Hon. Surgeon to Out-patients.

London Panel Committee, 17, Russell-square, W.C.—Organising and Asst. Med. Secy. £600.

London Skin Hospital, 40, Fitzroy-square, W.—Hon. Phys.

Maidstone, Kent County Mental Hospital.—Asst. M.O. £300.

Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Sen. H.S. Also Jun. H.S. £130 and £100 respectively.

Manchester Royal Children's Hospital.—Asst. S. £50.

Margate and District New General Hospital.—Res. M.O. £125.

Middlesbrough County Borough Fever Hospital.—Asst. Res. M.O. £450.

Miller General Hospital, Greenwich-road, S.E.—H.P., and H.S. Each at rate of £125. Also Out-patient Officer. At rate of £150.

Mitcham, Wilson Cottage Hospital.—Hon. Consulting S. and Hon. Consulting P. to Ear, Nose, and Throat Dept.

National Hospital, Queen-square, W.C.—Jun. Reg. £200. Also Asst. Phys.

Northampton General Hospital.—Asst. H.S. At rate of £150.

Northampton, Mental Hospital, Berrywood.—Locum Tenens M.O. 7 gns. per week.

Nottingham General Hospital.—2nd Cas. O. At rate of £150.

Paisley District Asylum, Riccartsbar.—Clin. Asst. £200.

Plymouth, City of.—Deputy M.O.H. £750.

Plymouth City Hospital.—Res. Med. Supt. £1000.

Plymouth, S. Devon and E. Cornwall Hospital.—H.S. At rate of £100.

Preston, Sharoe Green Hospital, Fulwood.—Jun. Res. M.O. At rate of £104.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Surg. Reg.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—3rd M.O. for Antenatal Dept.

Queen Mary's Hospital for East End, Stratford, E.—H.P.'s and H.S.'s Each £120. Also H.P. and Cas. O. £150.

Queen's Hospital for Children, Hackney-road, E.—H.P. Also Cas. O. Each at rate of £100. Also Res. M.O. At rate of £200.

Rotherham Hospital.—Sen. H.S. £200. Also H.P. £180.

Royal Free Hospital, Gray's Inn-road, W.C.—Asst. M.O. for Female V.D. Clinic. At rate of £350.

Royal Free Hospital, and London (R.F.H.) School of Medicine for Women, W.C.—Res. Asst. Path. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Hon. Asst. Physician.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.

St. Marylebone, Borough of.—Asst. M.O. and Public Vaccinator. £800.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Hon. Clin. Assts.

St. Thomas Hospital, S.E. — Physician. Physician to Out-patients' Dept. Asst. Dental S. Asst. M.O. for V.D. Dept. £450. Also Asst. Path. for V.D. Dept. £350.

Salford Royal Hospital.—H.P.'s. and H.S.'s. and Cas. H.S. All at rate of £125.

Salisbury General Infirmary.—Two H.S.'s. £150.

Sheffield Children's Hospital.—3rd Res. M.O. £100.

Sheffield, Jessop Hospital.—Res. M.O. £175.

Sheffield Royal Hospital.—Res. Anæsthetist. At rate of £80.

Sheffield Royal Infirmary.—H.S. £80.

Smethwick County Borough.—Part-time M.O. 1½ gns. per session.

Southern Rhodesia Medical Service.—3 Asst. and Relieving Government M.O.'s. Each £500.

South Shields, Ingham Dispensary.—Sen. and Jun. H.S.'s. £200 and £150 respectively.

Sunderland Royal Infirmary.—Hon. Phys. £500.

Talgarth, Breconshire, S. Wales Sanatorium.—Asst. Res. M.O. £250.

Wales University.—Cecil Prosser Research Scholarship. £250. Mrs. John Nixon Scholarship. £150. Lord Merthyr Research Scholarship. £200. Also Ewen Maclean Research Scholarship. £150.

Wallasey, Victoria Central Hospital.—Jun. H.S. £100.

Walsall, General Hospital.—Cas. H.S. At rate of £120.

Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.

Western Dispensary, Rochester Row, Westminster, S.W.—Res. M.O. and Dispenser. £150.

West London Hospital, Hammersmith, W.—Hon. Surg. H.P., H.S., Aural and Ophth. H.S. Also Res. Asst. Cas. O. Each at rate of £100.

Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.—Con. Oph. Surg. One afternoon fortnightly. £100.

Wigan Infirmary.—3rd H.S. At rate of £150.

Willesden General Hospital, N.W.—H.P. £100.

Windermere, Ethel Hedley Hospital for Crippled Children.—Res. H.S. At rate of £150.

Windsor, King Edward VII. Hospital.—H.S. At rate of £100.

Wolverhampton Royal Hospital.—Cas. O. and Res. Anæsthetist. At rate of £125.

Worcester General Infirmary.—Jun. Res. M.O. £120.

THE Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Brecon (Brecknockshire).

Births, Marriages, and Deaths.

MARRIAGES.

MORRIS—TOMSON.—On May 17th, at St. Marylebone Parish Church, Dr. Claude Woodham Morris, O.B.E., to Doris F. Tomson, younger daughter of the late Mr. and Mrs. R. S. Tomson, of Luton, Beds.

SIMMONS—FREEBOROUGH.—On April 30th, 1930, at Marylebone, John Simmons, of Chilterns, Amersham Common, Bucks, to Margery Freeborough, M.B., B.S., B.Sc., daughter of Mr. and Mrs. J. H. Freeborough, of Sheffield.

DEATHS.

BLAXALL.—On May 24th, at his residence, Brantwood, Edgware, Frank Richardson Blaxall, M.D., L.R.C.P. Lond. M.R.C.S. Eng., D.P.H. Camb., Head of the Govt. Lymph Establishment, Hendon, in his 64th year.

CUMING.—On May 24th, Richard Ingram Cuming, M.R.C.S., L.R.C.P. Lond., aged 56 years.

MOORE.—On May 19th, at Habberley Cottage, Port Carlisle, Cumberland, William Hodgson Moore, M.R.C.S., L.R.C.P., aged 69 years.

NOLAN.—On May 15th, 1930, at her residence, Down County Mental Hospital, Downpatrick, Kathleen Mary, dearly-loved wife of Dr. M. J. Nolan, R.M.S., and eldest daughter of the late Thomas Greene, Green Lawn, Ennis, Co. Clare.—R.I.P.

RICHARDSON.—On May 21st, 1930, at 28, Leicester-road, Loughborough, Cecil George Richardson, M.D., B.S. Lond., F.R.C.S. Edin., M.R.C.S., L.R.C.P., aged 47.

SANKEY.—On May 20th, at his residence, St. Helens-crescent, Hastings, Julius Ivor Sankey, M.R.C.S., L.R.C.P., Middlesex Hospital, late of Brenchley and Great Yarmouth, aged 66.

SHEARD.—On May 23rd, at Bexhill-on-Sea, William Francis Sheard, M.R.C.S., L.R.C.P., late Medical Officer of Health, Wandsworth, in his 85th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

Notes, Comments, and Abstracts.

THE EFFECTS OF ELECTRIC SHOCK.

THE pathology of electric shock still needs elucidation, and research on animals, though its shortcomings are obvious, gives valuable information not otherwise obtainable. O. R. Langworthy and W. B. Kouwenhoven have recently published the results of a series of experiments on rats.[1] Their work was concerned primarily with injuries to the nervous system; rats do not die from auricular fibrillation, and the terms of the experiments eliminated the possibility of death through burning or failure of respiration.

The two questions which they tried to answer were whether it was possible to demonstrate definite lesions of the central nervous system in all cases of death by electricity with respiratory failure, and how many cases of delayed death were due to demonstrable lesions of the central nervous system. The current was applied from a metal cap on the head to a clip on the base of the tail. The results varied considerably with the intensity and nature of the current applied. It was found, contrary to the general belief that anæsthesia and sleep diminish the effects of an electric shock, that the mortality was definitely greater under deep anæsthesia. There was no noticeable sex difference, except that pregnant rats seldom recovered. Younger animals were less resistant than older ones. At 110 and 220 volts the alternating current was more destructive than the continuous, but at 1000 volts the continuous current did more harm. The duration of the contact proved more important than it had seemed to be in previous investigations; no rat survived after an exposure to a continuous current of 1000 volts for a second or more, although several survived exposure for a fraction of a second. The paralysis, however, depended less on the time element than on the initial shock.

The experiments provide an interesting commentary on the suggestion that it is possible by artificial respiration to save an animal whose nervous system has not been burnt. A large number of rats died at once after the shock without breathing again, and many of them were found to have developing hæmorrhages in the nervous system. A continuous current left the chest completely collapsed, whereas the alternating current fixed it in maximal expansion, and the strong tonic contraction of the whole musculature persisted for several seconds after the current was interrupted. Manipulation of the chest then often initiated spontaneous breathing, and at the higher voltages artificial respiration was more successful after alternating currents than after continuous ones. It is, however, never very satisfactory in such small animals. No rat died from cardiac failure, and the heart beat strongly and regularly after the shock in nearly every case. Rats only breathed during the shock with the lowest voltage, that of the 110-volt continuous current, and the respiration stopped when the switch was opened. Breathing seldom began spontaneously and was usually abnormal for a period of varying length, a result which suggests an intense injury to the respiratory apparatus. The authors believe that few of these rats could have been saved by any method of artificial respiration, but nevertheless emphasise the importance in man of attempting rescue immediately after the shock.

Cerebral hæmorrhage was commonest in the brain-stem. It was often found that some blood had escaped into the subarachnoid space, and rupture of the arteries of the choroid plexus produced the common picture of hæmorrhage into the cerebral ventricles. Hæmorrhage into the spinal cord, an injury of alternating currents, seemed to be due to a mechanism typical for all cases, chiefly the rupture of a small artery in the posterior septum in the lower thoracic region. The blood, it appears, escapes among the posterior column fibres of the cord, producing a good deal of damage and extending for a considerable distance in both rostral and caudal directions. Minor hæmorrhage limited to the posterior columns produced little abnormality of behaviour, but in most cases the blood broke into the central canal and spread up and down, pressing on the ventral cells and injuring the tracts, and in some cases leading to a complete transverse necrosis of the cord. At autopsy the cord in the lower thoracic area of rats which had shown severe paralysis of the hinder parts was often completely disintegrated. These hæmorrhages into the cord were much more commonly found after shocks with alternating currents than with direct; the time of exposure did not seem to be very important. R. W. Urquhart[2] showed that the blood pressure rose to twice its normal height when the current was switched off, and the present authors consider that this fact would account for all hæmorrhages except, possibly, those of the spinal cord. They point out that the latter seemed to occur always at the place of greatest curvature of the spinal column. The cord, however, lies so freely in the vertebral canal that it is hard to see how even a violent pull on the spine could injure its blood-vessels. The authors do not suggest an explanation. They promise a further contribution describing the injuries to the central nervous system in greater detail.

The important part of their work, practically speaking, is the doubt which it throws on Urquhart's statement that artificial respiration will revive any animal in which no cardiac damage has occurred. They have shown that hæmorrhages incompatible with life can certainly occur in the central nervous system of rats. It would be valuable to know whether this is true for larger animals or man.

[1] Jour. of Indust. Hyg., 1930, xii., 31.
[2] Ibid., 1927, ix., 140; see THE LANCET, 1927, ii., 1001.

A MEDICINAL SPRING ON THE BEACH.

To the Editor of THE LANCET.

SIR,—I should like to bring to the notice of those of your readers who are interested in hydrology a flow of waters on the beach at Newtown, Porthcawl, Glam., which has a remarkable action on a limb immersed in it. Although the waters are much colder than the sea, they confer on the limb a ruddy appearance and a feeling of warmth. If immersed for some time in adjacent pools, though these feel much warmer, the part turns white and becomes numbed. The well is mentioned by Camden in his "Britannia" and has a tradition of being efficacious in healing pain in old wounds and arthritic joints.

I am, Sir, yours faithfully,
W. HARTLAND, M.B., B.Ch. R.U.I.

The Poplars, Porthcawl, March 31st, 1930.

BRITISH EQUIPMENT FOR HOSPITALS.

To the Editor of THE LANCET.

SIR,—May I ask for the hospitality of your columns to emphasise how desirable it is that our large voluntary hospitals should be equipped with British instruments? Although it may be taken for granted that the members of our hospital committees and the subscribers to hospital funds are patriotic men who appreciate the dire need of our home industries in the present conditions of unemployment, it is a lamentable fact that foreign surgical and electro-medical instruments, &c., are still to be found in many of our institutions.

It is safe to say that in the majority of these cases the responsible authorities have no knowledge of the facts, as in too many instances in which foreign appliances are factored by British firms some pains are needed to elucidate the position.

I trust, however, that once this matter has been ventilated, our hospital committees will ask the firms who quote prices for their equipment to give full particulars in their tenders of the factories in which the work will be carried out, so that they can satisfy themselves that the goods they purchase are not only sold by British firms, but are indisputably manufactured in this country.

The leading British manufacturers can be trusted to produce the very best instruments, so that in the long run this should not involve any extra cost, and even if in some cases additional money has to be provided at the outset the purchasers will have the satisfaction of knowing that, by their patriotic action, they are helping the classes on whom they depend for the maintenance of the institutions they administer so faithfully.

I am, Sir, yours faithfully,
J. A. CORCORAN,
Director.

National Union of Manufacturers,
6, Holborn Viaduct, E.C.

TUBERCULOSIS LEAFLETS.

THE National Association for the Prevention of Tuberculosis (Tavistock House North, Tavistock-square, London, W.C.) has issued revised editions of three leaflets: No. 3 dealing with milk and tuberculosis, No. 9, with hints on the management of children up to 5 years of age, and No. 10, with hints on the care of children of school age. Any of these may be obtained at one shilling a dozen or five shillings a hundred, post free. The practitioner will find these leaflets useful in saving his time when he has to give directions for prevention or treatment.

INFORMATION ON BIRTH CONTROL.

OUR issue of April 12th contained an account of a recent conference on the giving of Information on Birth Control by Public Health Authorities. A full report of these meetings has now been published and may be had from the Conference Secretary, Parliament Mansions, London, S.W.1. (Price 6*d*.)